Government of Trinidad and Tobago
MINISTRY OF EDUCATION
OCCUPATIONAL RESEARCH UNIT

OCCUPATIONS
IN
INFORMATION TECHNOLOGY

2007

DICTIONARY OF OCCUPATIONS FOR TRINIDAD AND TOBAGO (DOTT).

CONTENTS

FOREWORD

Information Technology is one of the more dynamic sectors in Trinidad and Tobago as producers and users of this technology seek more efficient and user-friendly ways to create and manage information while adapting and trying to be competitive in their respective fields.

Employment prospects are good since almost every establishment in the modern sector uses computers and increasingly more are becoming networked. Opportunities are available at many points on the occupational spectrum, from Managers and Professionals, to Technicians and Associate Professionals, Clerical, Sales and Service workers.

Personnel are required who can understand business needs and create solutions to satisfy these needs. Skills are needed to design, install and maintain hardware and software and to provide customer support. Skills are also required for development and maintenance of websites, databases and various Internet communications. Apart from technical skills, most companies value communication and customer relations skills because of the high degree of customer interface required in some positions.

The sector is increasingly linked with Telecommunications as wireless communications, broadband systems and similar technologies become increasingly used.

Although many education and training opportunities are available locally and internationally, skill shortages still exist since the technology is evolving and expanding so rapidly. There is therefore ample opportunity for those wishing to get into or advance in the field.

UPDATING OF THE DOTT

Occupational changes take place quite frequently in response to technological developments, organizational restructuring, etcetera.

The Occupational Research Unit in the Ministry of Education would welcome information on the development of new occupations or changes in occupations to facilitate periodic updating of the DOTT.

We also welcome your comments/questions on format and content.

Information or queries may be directed to:

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INTRODUCTION

The current compilation forms part of the Dictionary of Occupations for Trinidad and Tobago (DOTT) which was first published in 1992 and which consists of an occupational classification and coding system and descriptions for occupations found in Trinidad and Tobago as well as various indices and notes. The DOTT is considered to be the national classification of occupations.

Preparation of the current publication consisted of updating occupations previously published in DOTT 1992 and adding new occupations which came into existence subsequently or which were not previously analysed.

Research was conducted with the assistance of personnel from representative establishments in the public and private sectors and professional bodies. It consisted of on-site job analysis involving direct observation of workers, interviews with workers, their supervisors and senior managers, and consultation with experts.

The term "occupation" is applied to a group of jobs having common or closely related responsibilities and duties, occurring in representative establishments all over the country. As such, the occupational descriptions in the DOTT present average pictures of what takes place in Trinidad and Tobago and do not correspond precisely with any one establishment, unless that establishment is unique.

Occupational descriptions in the DOTT describe the type of work performed, not the person doing the work. A deliberate attempt is made to eliminate the use of sexually biased terminology, although at times it is not possible to eliminate it altogether.

STRUCTURE OF THE CLASSIFICATION

The occupational classification is modelled on the International Standard Classification of Occupations (ISCO) which places occupations into groups based on the criteria of work performed and skill or ability necessary to carry out the relevant duties, ranging in a progression from the broadest to the most detailed level of aggregation. However, the ISCO has been adapted to reflect the occupational structure of Trinidad and Tobago.

Occupations are classified into MAJOR, SUB-MAJOR, MINOR and UNIT groups based on similarity of work performed.

Major Groups are the broadest grouping of occupations. Apart from Major Groups 1 and 0, the groups are based on the skill levels of workers and on very general areas of economic activity and are a convenient means of grouping all occupations falling within these wide fields of work. The Major Groups are as follows:-

Major Group 1   Legislators, Senior Officials and Managers
Major Group 2   Professionals
Major Group 3   Technicians and Associate Professionals
Major Group 4   Clerks
Major Group 5   Service Workers and Shop Sales Workers
Major Group 6   Skilled Agricultural and Fishery Workers,
Major Group 7   Craft and Related Workers,
Major Group 8   Plant and Machine Operators and Assemblers,
Major Group 9   Elementary Occupations
Major Group 0   Defence Force.

Sub-major Groups are divisions of the respective major groups. These are based on skill specialization relating to the field of knowledge required, the tools and machinery used, materials worked on or with, and the kinds of goods and services produced.

Minor Groups are a breakdown of Sub-Major Groups and also a collection of Unit Groups. The groupings at this level are still fairly general.

Unit Groups are the most specific grouping of occupations. They are basic groups of occupations in which the main tasks have many similar characteristics. Unit Groups thus have occupational homogeneity and there is a closer relationship between occupations in the same Unit Group in terms of work performed than between occupations from different Unit Groups.

COMPONENTS OF AN OCCUPATIONAL DESCRIPTION

Each occupational description has the following seven basic components:-
   i. Occupational Code Number;
   ii. Base Title, sometimes followed by Alternate Title(s);
   iii. Occupational Definition;
   iv. Statement of Duties;
   v. Related Job Titles, if any,
   vi. Education/Training and Experience Requirements and
   vii. Occupational Profile

Occupational Code Number
Six-digit code numbers are provided for all unique occupations in the DOTT. The first digit denotes the Major Group, the first two digits denote the Sub-Major Group, the first three digits denote the Minor Group, and the first four digits denote the Unit Group. The entire six-digit code number, including the two digits right of the decimal point, indicates the occupational category.

Occupational Titles
Base Titles appear immediately after the six digit code number and are printed in upper-case bold-face letters. These are the titles by which occupations are widely known and understood in the majority of establishments in Trinidad and Tobago.

Alternate Titles are the synonyms for Base Titles, but they are the less frequently used titles by which such occupations are known. An occupation may have one or more alternate titles. They are printed immediately after the Base Title, after a 'stroke'(/), in upper/lower case, bold-face type.

Related Titles are variations of the Base Titles, but are not sufficiently different from them to justify classification as separate six-digit occupations. These titles are printed in capital letters at the end of descriptions and are arranged in alphabetical order. The list of Related Titles is illustrative, not exhaustive.

Index Titles do not appear in descriptions but are listed only in the Alphabetical Index. They are a device used when the list of Related Titles to an occupation is too lengthy. They carry the Occupational Code Number of the occupation in question.

Occupational Definition
The opening statement following the Base Title and/or Alternate Titles is the definition of an occupation, succinctly describing the nature and purpose of an occupation.

Statement of Duties
The statement of duties is presented in a bulleted format. It elaborates on the definition and provides information on the 'what', 'why' and 'how' of the occupation.

'May' items appear after the statement of duties. These duties are performed by some workers, in some establishments, but are not necessarily performed by all workers.

Education/ Training and Experience Requirements
These statements spell out the recruitment requirements of an occupation.

Occupational Profile
Occupational information contained in these profiles provides essential information for use in educational and vocational guidance, job development and placement, development of apprenticeship and training programmes, etc.

NUMERICAL INDEX

LAN SPECIALIST
NETWORK ENGINEER, DATA SYSTEMS
NETWORK ENGINEER, VOICE SYSTEMS
SPECIALIST ENGINEER, NETWORKING AND SECURITY
VOICE ENGINEER

OCCUPATIONS IN INFORMATION TECHNOLOGY

1226.10 MANAGER, INFORMATION TECHNOLOGY/ Manager, Information Systems
Plans, directs and coordinates information technology operations of establishment, directly or through subordinate managerial/supervisory personnel:

- Develops Information Technology policies and programs in conjunction with managers of other departments
- Evaluates establishment's needs in relation to operations and determines software and hardware and human resource requirements
- Prepares project proposals and manages approved projects to ensure delivery within budget and given timeframe
- Manages acquisition, installation, maintenance and upgrade of organization's Information Technology infrastructure
- Implements and supports software applications
- Develops and implements data security and disaster recovery procedures
- Prepares and manages departmental budget
- Supervises information technology staff directly or through supervisory staff
- Develops and implements training strategy for staff to ensure efficient support of information technology function
- Conducts research into and keeps abreast of developments in the field of information technology
- Ensures maintenance of manageable inventory levels of computers, components and networking infrastructure materials
- Ensures adherence to general business practice and Information Technology standards and procedures;
- Manages and controls access to and use of network resources.

RELATED TITLES
CORPORATE INFORMATION TECHNOLOGY MANAGER
DIRECTOR, INFORMATION NETWORKS DIVISION
DIRECTOR, INTERNET SERVICES
DIRECTOR, SYSTEMS DEVELOPMENT
INFORMATION SYSTEMS COORDINATOR
INFORMATION TECHNOLOGY INFRASTRUCTURE MANAGEMENT LEADER
MANAGEMENT INFORMATION SYSTEMS MANAGER
MANAGER, COMPUTER OPERATIONS
MANAGER, ELECTRONIC DATA PROCESSING
MANAGER, INFORMATION SECURITY
MANAGER, NETWORK SECURITY
SENIOR MANAGER, PROCESSING SYSTEMS
SHIFT MANAGER, SYSTEMS AVAILABILITY
SITE MANAGER, DIGITAL BUSINESS

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Degree in Computer Science, Management Information Systems or Business Management;
Knowledge of systems and databases related to work of establishment; 5-10 years experience
in the field of Information Technology including experience at a supervisory or managerial
level.

OCCUPATIONAL PROFILE

Data/People/Things:	Planning and directing work activities; exchanging information to arrive at terms of agreement;
Education and Training Development:	University first degree;
Special Vocational Preparation:	Over five years, up to and including 10 years;
Temperaments:	Direct, control and planning of an activity or project; dealing with people beyond giving and receiving instructions; evaluation of information using subjective or judgmental criteria; precise attainment of set limits, tolerances or standards;
Aptitudes:	Good communication skills; numerical skills; ability to visualize objects in three dimensions from drawings; ability to perceive details in objects or pictorial material and in verbal/ tabular material;
Interests:	Scientific and technical work; leading and influencing others;
Physical Demands:	Light work; frequent handling, fingering and writing; frequent speaking and hearing;
Environmental Conditions:	Usually daytime but may be required to work at night or be on call.

2131.05 INFORMATION TECHNOLOGY SUPERVISOR/Information Technology Coordinator

Supervises and coordinates activities of assigned information technology department and provides technical leadership

- Plans, organizes and implements activities related to assigned area
- Supervises work of technical and/or professional staff
- Ensures that development and implementation of new applications and systems are done according to user specifications
- Oversees operations and ensures itegrity of current applications and databases
- Advises users, superiors and subordinates about best information technology practices
- Ensures adherence to information technology standards
- Manages and controls assigned resources
- Prepares technical documentation and status reports.

RELATED TITLES
BUSINESS APPLICATION SUPERVISOR
BUSINESS SOLUTIONS SUPERVISOR
CONTROL ROOM SUPERVISOR

COORDINATOR, INFORMATION TECHNOLOGY BUSINESS
LEAD ANALYST PROGRAMMER
NETWORK AND DATACOM SUPERVISOR
NETWORKING SUPERVISOR

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
University Degree or technical certification in the field of Information Technology. 3-
5 years related work experience including knowledge of technical writing.

OCCUPATIONAL PROFILE

Data/People/Things:	Planning and directing work activities; supervising work-related activities of a group of workers; handling;
Education and Training Development:	University first degree
Special Vocational Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Direction, control and planning of an activity or project; dealing with people beyond giving and receiving instructions; evaluation of information using subjective or judgmental criteria; precise attainment of set limits, tolerances or standards; teamwork
Aptitudes:	Communication skills; numerical skills;
Interests:	Scientific & technical work, business detail;
Physical Demands:	Light work, speaking, hearing, writing;
Environmental Conditions:	Inside, daytime, night, shift/on call, working around people.

2131.10 INFORMATION TECHNOLOGY CONSULTANT
Designs and modifies clients' information processing systems and coordinates implementation to maximize business efficiency:

- Consults with clients' staff to determine information processing requirements
- Identifies problems and formulates strategic and information technology plans geared toward improving business operations
- Assists with implementation of new systems, including hardware and software projects
- Helps clients to maximize results of use of computer technology
- Devises and implements security plans to protect clients' information systems from system related crimes
- Conducts efficiency evaluations on clients' Information Technology staff
- Prepares reports on work in progress for clients
- Handles administrative aspects of consultancy.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
BSc. in Computer Science or related area. Post-graduate Degree or Diploma in Management or Information Technology desirable. Recognized professional certification. 5-10 years' work experience in the Information Technology field.

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating data analysis to develop concepts or systems; negotiating, operating-controlling;
Education & Training Development:	University first degree
Special Vocational Preparation:	Over 5 years, up to and including 10 years
Temperaments:	Direction, control and planning of an activity or project; dealing with people beyond giving and receiving instructions, evaluation of information using judgmental criteria, precise attainment of set limits, tolerances or standards;
Aptitudes:	Ability to comprehend and effectively use language, numerical ability, ability to perceive details in objects or in graphic material, ability to perceive pertinent details in verbal/ tabular material, motor coordination;
Interests:	Scientific and technical work, business detail, leading- influencing;
Physical demands:	Light work, writing, speaking, hearing,
Environmental Conditions:	Inside, daytime, working around people.

2131.12 SYSTEMS ADMINISTRATOR/ Information Systems Administrator/ Information Technology Administrator

Administers and maintains computer-based information systems in accordance with Information Technology policies and standards:

- Administers computer network, work stations and computer equipment
- Manages and controls access to and use of computer resources
- Implements project plans as instructed
- Monitors systems to ensure that software and hardware operate according to specified standards
- Evaluates existing systems and recommends and ensures implementation of upgrades
- Ensures implementation and maintenance of IT strategic plan, policies, procedures and standards
- Installs, configures and customizes operating systems and software support tools
- Assists with development and implementation of disaster recovery and contingency plans, and ensures plans are kept up to date
- Supervises daily activities and provides technical leadership to staff
- Prepares status reports to update senior management.

RELATED TITLES:
SYSTEMS ADMINISTRATOR, CLIENT SYSTEMS
SYSTEMS ADMINISTRATOR, MIDRANGE SYSTEMS
SYSTEMS ADMINISTRATOR, NETWORK SYSTEMS
SYSTEMS ADMINISTRATOR, OPERATING SYSTEMS
SYSTEMS ADMINISTRATOR, SERVER SYSTEMS

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
BSc. in Computer Science, Information Technology or related field; recognized professional certification; knowledge of required operating systems; 3-5 years experience in an Information Technology environment;

OCCUPATIONAL PROFILE

Data/People/Things:	Planning and directing work activities; supervising others; handling;
Education and Training Development:	University first degree
Special Vocational Preparation:	Over 3, up to and including 5 years
Temperaments:	Ability to direct, control and plan activities and projects, to deal with people and to evaluate information using judgmental criteria;
Aptitudes:	Good communication skills; numerical skills and ability to perceive details in objects or graphic/verbal/tabular material; strong analytical and problem-solving skills
Interests:	Scientific & technical work, business detail and leading-influencing others;
Physical demands:	Sedentary-Light work with significant amounts of speaking and hearing, some writing and other use of hands;
Environmental Conditions:	Usually inside and daytime work but may be required to be on call or work nights.

2131.14 NETWORK ADMINISTRATOR/Network Services Administrator/Network Specialist

Designs, implements and controls use of computer networks and network resources:

- Participates in design of networks and evaluates computer hardware and software for use in network
- Recommends modifications to capacity or network design to meet current and new requirements
- Installs operating systems and/or networking software and hardware
- Develops disaster recovery and contingency plans
- Develops security protocols and ensures maintenance of network security
- Controls access to and use of network resources
- Reviews system configurations for integrity, performance and compliance with installation standards and assists in maintaining up-to-date configuration
- Provides support to network users to ensure maximum efficiency and effectiveness in the use of resources
- Maximizes use of technology in organization to ensure efficiency and effectiveness in use of resources
- Creates and maintains network floor plans, equipment, inventory and configuration databases and monitors services provided by designated suppliers.

RELATED TITLES
LAN ADMINISTRATOR

WAN ADMINISTRATOR

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
BSc. Degree in Computer Science/Information Systems or related discipline; recognised professional certification in networking; familiarity with network operating systems, various network environments, cabling standards and network/hardware components. 2-3 years related professional experience.

OCCUPATIONAL PROFILE

Data/People/Things:	Planning and directing work activities; communicating with people to convey or exchange information, precision work;
Education & Training Development:	University first degree
Special Vocational Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Direction, control and planning of an activity or project, dealing with people, evaluation of information using judgmental criteria;
Aptitudes:	Ability to comprehend and effectively use language, numerical skills, ability to perceive details in objects or graphic material, ability to perceive details in verbal/tabular material; analytical and problem solving skills
Interests:	Scientific & technical work, business detail, leading-influencing others;
Physical demands:	Sedentary-Light work, handling, fingering, writing, speaking, hearing, standing, walking, sitting;
Environmental Conditions:	Inside, daytime, may be required to be on call or work nights, working around people.

2131.15 SYSTEMS ENGINEER
Designs, installs and maintains computer hardware and operating systems and applications:

• Analyses information processing needs and evaluates existing systems

• Designs or modifies systems, specifying required operating system, applications and hardware

• Documents layout of current and proposed systems

• Installs and configures hardware and software according to approved design and installation checklist

• Tests and debugs system to ensure intended outcomes and obtains sign-off

• Participates in training of system end-users

• Provides technical support during proposal preparation and negotiation

• Determines scope of effort required to maintain systems and prepares or validates service estimates

• Provides telephone or on-site support

• Completes service reports, updates logs and maintains files and records.

RELATED TITLES:
SYSTEMS ENGINEER (PRE-SALES)

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
University degree in Computer Science, Information Systems or recognized professional certification in systems engineering or related field; 3-5 years related experience;

OCCUPATIONAL PROFILE

Data/People/Things:	Examining and evaluating data; setting up equipment and systems;
Education & Training	
Development:	University first degree
Special Vocational	
Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Evaluation of information using judgmental criteria;
Aptitudes:	Good communication skills; numerical skills; ability to visualize objects in three dimensions and perceive details in objects or graphic/verbal/tabular material;
Interests:	Scientific & technical work and business detail;
Physical demands:	Light work with significant amounts of speaking and hearing, some writing and other use of hands;
Environmental Conditions:	Usually inside and daytime work but may be required to be on call or work nights.

2131.20 SYSTEMS ANALYST
Designs and supervises implementation of information technology solutions:

- Ascertains information system requirements in collaboration with management and end-users
- Designs and/or develops applications solutions
- Conducts cost benefit analyses to determine feasibility of proposed system;
- Designs systems specifications to demonstrate operation of proposed system;
- Supervises programme development and monitors implementation
- Prepares and carries out systems and end-user testing to verify implementation of specified solutions
- Prepares technical documentation and operating instruction manuals;
- Provides training to end-users on specific application systems

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
BSc. in Computer Science or related area; at least 3 years related work experience;

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating data to develop concepts; communicating with others; operating-controlling equipment
Education & Training	
Development:	University first degree
Special Vocational	
Preparation:	Over 2 years, up to and including 3 years
Temperaments:	Varied work, dealing with people, evaluation of information using judgmental criteria, precise attainment of set standards;

Aptitudes:	Good communication skills; numerical skills and ability to perceive details in verbal/tabular material;
Interests:	Leading-Influencing others; science and technical
Physical demands:	Light work, frequent handling and fingering for use of computer and some writing, frequent speaking and hearing, frequent acute vision, some standing and walking, sitting

Environmental
Conditions: Usually inside and daytime work, may work as part of team.

2131.25 NETWORK ENGINEER

Develops, installs and maintains voice and data network and network communication systems to enable hardware, software and data sharing capabilities:

- Designs and implements network solutions
- Installs and configures network operating systems on network servers
- Installs and maintains networking equipment, hubs, routers and switches in conjunction with technicians
- Implements network and security software to protect networks
- Monitors network performance to ensure optimum operating efficiency
- Diagnoses computer and network problems
- Assists users to resolve hardware/software problems on variety of systems
- Keeps abreast with current technology
- Prepares scope of works, cost estimates and other reports and records

RELATED TITLES:
LAN SPECIALIST
NETWORK ENGINEER, DATA SYSTEMS
NETWORK ENGINEER, VOICE SYSTEMS
SPECIALIST ENGINEER, NETWORKING AND SECURITY
VOICE ENGINEER

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
BSc. in Computer Science, Information Systems or Electrical Engineering.
Recognized professional certification in network engineering; 3-5 years practical experience

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating data to develop concepts; communicating with others; setting up;
Education &Training	
Development:	University first degree
Special Vocational	
Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Varied work, dealing with people, evaluation of information using judgmental criteria, precise attainment of set limits, tolerances and standards, team work;

Aptitudes:	Communication skills; numerical skills, ability to visualize objects in three dimensions and ability to perceive details in graphic/verbal/tabular material; motor coordination with hand and finger dexterity;
Interests:	Scientific & technical work.
Physical demands:	Medium work with lifting, carrying, stooping, handling, fingering, writing, speaking and hearing, acute vision with ability to adjust focusing, standing and walking.
Environmental Conditions:	Inside, daytime, working around people.

2131.30 SOFTWARE ENGINEER/ Systems Developer

Develops, customizes and updates software

- Analyzes objectives of programming project and confers with other software engineers to exchange ideas
- Designs logical representation of flow, storage and processing of client data
- Writes and tests programs in computer language
- Debugs programs to ensure that software operates according to defined specifications
- Creates linkages between different tiers in software
- Documents design features of programs
- Updates software and keeps records of different versions produced
- Researches new coding and programming languages and new and emerging software design and development techniques and technologies
- Informs sales representatives of changes in software technology to enable them to deal with customers.

RELATED TITLES
SOFTWARE ENGINEER, OFFICE AUTOMATION
SOFTWARE ENGINEER, BUSINESS SYSTEMS

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
First Degree in Computer Science or related field; recognised professional certification in systems engineering and systems development; 3-5 years practical experience in software programming and system development; extensive knowledge of programming languages and application development tools;

OCCUPATIONAL PROFILE
Data/People/Things:	Integrating data to develop concepts; communicating with others; operating-controlling equipment;
Education & Training Development:	University first degree
Special Vocational Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Dealing with people, evaluation of information using judgmental criteria, precise attainment of set standards;
Aptitudes:	Good communication skills; numerical skills; ability to perceive details in graphic/verbal/tabular material; motor coordination with hand and finger dexterity;

Interests:	Creative expression of ideas; scientific and technical work; business detail; leading and influencing others using high-level abilities;
Physical demands:	Sedentary work; frequent handling and fingering and some writing, some speaking and hearing, frequent acute vision with ability to adjust focusing; sitting;
Environmental Conditions:	Usually inside and daytime work, may work as part of team;

2131.35 DATABASE ADMINISTRATOR/ Database Specialist /Database Technologist

Develops, manages and maintains organization's database and ensures integrity and security of data:

- Develops database designs for new systems or enhancements
- Establishes and maintains Data Dictionary, defining size and use of tables, and procedures for its usage.
- Develops security and control procedures for databases, including recovery/restart and backup procedures
- Installs, configures and tests database applications
- Provides technical support and training for database users
- Develops, documents and manages application of database policies and standards
- Monitors performance of database management system and determines changes required in systems, operations or files
- Determines changes in information reporting needs of user departments
- Determines and effects updates to data architecture
- Prepares systems and operations documentation in accordance with established MIS standards.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:

BSc. Degree in Computer Science or Information Technology, 3-5 years experience in Information Systems processing and database design and administration. Certification in Database Administration may be an asset

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating data to develop concepts; communicating with others; operating-controlling equipment;
Education & Training	
Development:	University first degree
Special Vocational	
Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Dealing with people, evaluation of information using judgmental criteria, precise attainment of set standards;
Aptitudes:	Good communication skills; numerical skills; ability to perceive details in verbal/tabular material; motor coordination with hand and finger dexterity;
Interests:	Scientific & technical work; business detail; leading and influencing others using high-level abilities;

Physical demands:	Sedentary work; frequent handling and fingering and some writing, some speaking and hearing, frequent acute vision with ability to adjust focusing; some standing and walking with frequent sitting;

**Environmental
Conditions:** Usually inside and daytime work, may work nights/ on call.

2131.40 SUPPORT ANALYST, INFORMATION TECHNOLOGY/ Information Technology Support Officer

Supports users of establishments' information systems and technologies to improve organizational efficiency:

- Analyses problems and troubleshoots to find solutions within Information Technology environment
- Provides hardware and applications support to end users and ensures that equipment functions properly
- Trains staff in Information Technology procedures and use of software
- Makes recommendations about sharing server space and memory and advises on compatibility of different software versions
- Ensures that systems are available for maximum usage through regular maintenance, process improvements and system enhancements.
- Contributes to development of management information systems
- Attends managerial and technical update meetings
- Compiles data on information technology projects and prepares reports
- May design, develop, test and verify program changes and /or system upgrades.

RELATED TITLES:
APPLICATIONS CONSULTANT
APPLICATION SUPPORT OFFICER
MANAGEMENT INFORMATION SYSTEMS OFFICER
SOFTWARE SUPPORT SPECIALIST
TECHNICAL APPLICATIONS SUPPORT ANALYST

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
BSc. in Computer Science, Information Technology or Information Systems and 2-
3 years related work experience

OCCUPATIONAL PROFILE

Data/People/Things: Examining and evaluating data; communicating with others; operating-controlling equipment;

**Education & Training
Development:** University first degree

**Special Vocational
Preparation:** Over 3 years, up to and including 5 years

Temperaments:	Dealing with variety and change without loss of efficiency, dealing with people, evaluation of information using judgmental criteria, precise attainment of set standards;
Aptitudes:	Good communication skills; numerical skills; ability to visualize objects in three dimensions and perceive details in objects or in graphic/verbal/tabular material; motor coordination; finger dexterity;
Interests:	Scientific & technical work; business detail;
Physical demands:	Light work; frequent handling and fingering and some writing, frequent speaking and hearing, frequent acute vision with ability to adjust focusing; frequent standing and walking with some sitting;
Environmental Conditions:	Usually inside and daytime work, but may work nights/ on call.

2131.45 PROGRAMMER/ANALYST

Analyses end-users' requirements and develops computer programs and other solutions:

- Evaluates user requests in collaboration with other technical and/or supervisory staff
- Designs application solutions to problems
- Analyses problems to determine data input, processing and output requirements
- Writes, tests, debugs, implements and documents programs and procedures
- Implements solutions by installing programs and training users
- Provides support on operational issues for installed applications.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:

B.Sc. in Computer Science or a related field; 2-3 years related working experience
Knowledge of programming methodology; experience in programming;

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating data to develop concepts; communicating with others; setting up of equipment;
Education & Training Development:	University first degree
Special Vocational Preparation:	Over 3 years up to and including 5 years
Temperaments:	Dealing with varied duties without loss of efficiency, dealing with people, evaluation of information using judgmental criteria, precise attainment of set standards; team work;
Aptitudes:	Good communication skills; numerical skills and ability to perceive details in verbal/tabular/graphic material;
Interests:	Scientific and technical work and business detail;
Physical demands:	Light work, handling, fingering, writing, speaking, hearing, acute vision, ability to adjust focusing, standing, walking.
Environmental Conditions:	Inside, daytime work around people.

2131.50 E-BUSINESS CONSULTANT
Designs, develops and implements e-business strategies to optimize clients' business processes through web-based technologies:

• Builds and maintains relationships with prospective clients and promotes sales of company's services and products
• Conducts technical presentations and product demonstrations to inform clients of available services and product capabilities and provides awareness of current trends in technology
• Analyses clients' business and technological requirements and recommends e-business solutions
• Integrates existing applications using web-based technologies to facilitate exchange of information within organization
• Determines technology required for setting up portals to provide universal access to information, applications and services over the Internet and creating web service environments to allow product selection and order initiation
• Develops sites to exchange information on goods between establishments and their strategic business partners
• Manages implementation of projects to ensure full and timely delivery of objectives
• Identifies and keeps abreast of industry trends
• Prepares requests for proposals and management reports.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
University degree in the field of Information Technology or Business management; knowledge of Internet technologies; 5-10 years combined IT and Business work experience with emphasis on Internet-based solutions.

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating data to develop concepts; influencing others; operating/ controlling of equipment;
Education & Training Development:	University first degree
Special Vocational Preparation:	Over 5 years, up to and including 10 years
Temperaments:	Dealing with varied duties without loss of efficiency; direction, control and planning of an activity or project; dealing with and influencing people, evaluation of information using judgmental criteria, precise attainment of set standards; team/group work
Aptitudes:	Good communication skills; numerical skills, ability to visualize objects in three dimensions, to perceive details in objects or in verbal/tabular/graphic material; motor coordination with manual and finger dexterity.
Interests:	Scientific and technical work, business detail; leading-influencing others;
Physical demands:	Light work, handling, fingering, writing speaking, hearing, acute vision, ability to adjust focusing, standing, walking, sitting;
Environmental Conditions:	Inside, daytime, working around people, may work on call.

2131.52 INFORMATION SECURITY ADMINISTRATOR/

Plans, develops and ensures implementation of organisation's information security policies and practices:

- Defines security framework for new and existing systems
- Plans and develops information security policies, practices, procedures and guidelines
- Monitors use of system to ensure compliance with policies and practices and maintenance of defined standards
- Provides technical support for network security configuration and management
- Manages security devices such as firewalls, ensures internet access controls and manages breaches of security
- Conducts tests to discover vulnerability of information system
- Evaluates existing security administration and recommends ways to streamline tasks
- Maintains documentation to support security administration
- Promotes security awareness through documentation and training and advises on best practices.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:

Bachelor's degree in Information Technology or computer-related field, certification in computer engineering and network security and 2 years' experience in information systems.

OCCUPATIONAL PROFILE

Data/People/Things:	Planning and directing work activities; communicating with others; setting up equipment;
Education & Training Development:	University first degree
Special Vocational Preparation:	Over 5 years, up to and including 10 years
Temperaments:	Direction, control and planning of an activity or project, influencing people, evaluation of information using judgmental criteria, precise attainment of set limits, tolerances or standards, team/group work;
Aptitudes:	Good communication skills; numerical skills, ability to visualize objects in three dimensions from drawings /representations, ability to perceive details in objects or in graphic /verbal/tabular material; motor coordination with hand and finger dexterity;
Interests:	Scientific & technical work, use of authority to protect people and property;
Physical demands:	Light work, handling, fingering, writing, speaking, hearing, vision-normal, near acuity with ability to adjust focusing, standing, walking, sitting.
Environmental Conditions:	Inside, daytime, occasional night/on call.

2131.55 QUALITY ASSURANCE ANALYST, INFORMATION TECHNOLOGY/
Quality Control Officer, Information Technology

Develops and implements processes to ensure that technology-based solutions are implemented according to business specifications:

- Ascertains business needs of clients or internal users and associated system requirements
- Develops test plans and methodologies to be used in testing of solutions or uses prepared templates, measures and metrics according to industry standards
- Supervises or conducts testing of individual and integrated components of products or processes, validating of input and processing of output data and communication of detected errors to enable modification and re-testing
- Indicates scope for potential problems and suggests system response
- Identifies sources of reported problems
- Monitors availability of online data and timely delivery of computer-generated output to required departments
- Ensures technical currency of operational procedures
- Prepares or supervises preparation of documentation on quality assurance procedures.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
BSc. in an Information Technology area or Business Management Training in Quality Control/ Quality Assurance/Project Management; 2- 3 years experience in an I.T. related environment

OCCUPATIONAL PROFILE

Data/People/Things:	Examining and evaluating data; communicating with others; operating-controlling equipment;
Education and Training Development:	University first degree
Special Vocational Preparation:	Over three years and up to five years
Temperaments:	Ability to plan and control an activity or project; evaluation of information using subjective or judgmental criteria, precise attainment of set limits and standards; team work;
Aptitudes:	Good communication skills; numerical skills; ability to visualize objects in three dimensions, to perceive details in objects or in verbal/tabular/graphic material; motor coordination;
Interests:	Scientific and technical work , business detail; leading-influencing others through high-level verbal or numerical abilities;
Physical demands:	Light work, frequent handling and fingering and some writing, frequent speaking and hearing, frequent acute vision with ability to adjust focusing, some standing and walking and sitting;
Environmental Conditions:	Usually inside and daytime work around people, may work on call.

2131.60 WEBMASTER/Web Administrator/Web Content Administrator
Manages content, flow and availability of information on websites:
- Prepares annual plans for websites including goals, operational objectives, strategic approaches and budgetary requirements
- Collaborates with content providers and systems experts to ascertain information needs
- Provides advice to clients on appropriate and effective presentation of web documentation

- Designs and develops websites for employer or clients using graphic design and programming software
- Maintains home page and other primary site documents, ensuring that information is posted on website in timely manner
- Responds to or redirects enquiries relating to website
- Diagnoses and resolves web-related problems
- Identifies user needs based on user feedback and incorporates such information into strategic planning cycle
- Researches new software to ensure technology used is up to date
- Prepares reports such as monthly server statistics, site audits and user requirements surveys.

RELATED TITLE
WEB CONTENT MANAGER

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Undergraduate degree or technical training in Web Design/Graphic Design, two years' experience in a Web-related environment; knowledge of software such as HTML, MS Office, Visio and Front Page.

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating analyses of data to develop concepts, communicating with people, operating-controlling equipment;
Education and Training Development:	University first degree
Special Vocational Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Direction, control and planning of an activity or project, dealing with people beyond giving and receiving instructions; evaluation of information using subjective or judgmental criteria; artistic interpretation of feelings, ideas or facts; precise attainment of set limits tolerances or standards;
Aptitudes:	Good communication skills; numerical skills, ability to perceive details in graphic, verbal/ tabular material, motor coordination;
Interests:	Scientific & technical work; business detail; leading-influencing;
Physical Demands:	Sedentary work, use of hands and fingers, writing, speaking, hearing, vision- ordinary, within 0.5 meters, ability to adjust focusing; sitting;
Environmental Conditions:	Inside, daytime work, working around people.

2131.65 INFORMATION SYSTEMS AUDITOR / Information Technology Auditor
Audits computer-based information systems, data processing centres and telecommunication networks:

- Ascertains general and application control policies and procedures or assists with development

and implementation of control policies and procedures in an internal audit setting

- Develops/modifies and implements audit tests to determine if controls are being adequately implemented
- Evaluates information systems, data centre processes and related control procedures to identify risks or errors and makes recommendations for changes to policies or procedures
- Ensures maintenance of comprehensive audit documentation
- Prepares audit reports
- Develops new computer-assisted audit techniques to provide support for financial and performance audits
- Keeps abreast of current and emerging IT technology and auditing processes
- May investigate security breaches.

RELATED TITLE
INTERNAL AUDITOR, INFORMATION TECHNOLOGY

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Degree in Computer Science/Information Systems/Business Management or related field;
Certification in computer information systems or information security auditing; two years work experience in a technology environment and/ or computer information systems audits

OCCUPATIONAL PROFILE

Data/People/Things:	Analyzing data; communicating with people to convey or exchange information, operating-controlling equipment;
Education & Training Development:	University first degree
Special Vocational Preparation:	Over three years, up to and including 5 years
Temperaments:	Evaluation of information using judgmental criteria, precise attainment of set limits, tolerances and standards;
Aptitudes:	Good communication skills; numerical ability, ability to perceive details in objects or in verbal/tabular/graphic material; motor coordination;
Interests:	Scientific and technical work; business detail; leading and influencing others;
Physical demands:	Sedentary work; handling, fingering, writing, speaking, hearing, acute vision, ability to adjust focusing, standing, walking, sitting;
Environmental Conditions:	Inside; daytime work around people, may work on call.

2131.70 INFORMATION AND COMMUNICATIONS TECHNOLOGY SALES ROFESSIONAL
Identifies, promotes and develops opportunities for sale of information and communications technology (ICT) products and services:

- Conducts research into technological aspects of products and to determine whether market is ready for new products

- Establishes, develops and maintains network of contacts through personal, telephone and e-mail contacts and overseas travel
- Responds to business enquiries and Requests For Proposals for products and services offered
- Ascertains clients' systems currently in use, identifies needs or problems and suggests solutions
- Determines ability of product line to meet user requirements and collaborates with other company personnel for preparation of proposals
- Meets with clients to present, defend or clarify proposals and negotiate terms of contracts
- Participates in management of projects or individually manages small projects, ensuring products are available to meet project needs
- Prepares budget and submits monthly forecast of expected sales
- Attends training courses locally and abroad to maintain certification as product salesperson

May represent company at meetings where knowledge of specific product line is required and arrange seminars on new technologies.

RELATED TITLES:
ENTERPRISE SOLUTIONS MANAGER
REGIONAL BUSINESS DEVELOPMENT MANAGER
SOLUTIONS SALES PROFESSIONAL

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
BSc. in Computer Science or Business Administration, technical training and certification relative to hardware and/or software applications and training or experience in sales.

OCCUPATIONAL PROFILE

Data/People/Things:	Examining and evaluating data; exchanging information to arrive at terms of agreement; setting-up
Education and Training Development:	University first degree;
Special Vocational Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Variety and change in terms of often changing from one task to another of a different nature without loss of efficiency or composure; direction, control and planning of an activity or project; dealing with people beyond giving and receiving instructions; influencing people; evaluation of information using subjective or judgmental criteria; ability to work as part of a team/group;
Aptitudes:	Ability to comprehend and effectively use language; ability to perform mathematical operations and process quickly and accurately; ability to visualise objects in three dimensions from drawings/representations; ability to perceive pertinent details in objects or in pictorial/graphic material; ability to perceive pertinent details/ differences in verbal/tabular material; ability to make precise movements accurately and swiftly by coordinating eyes, hands and/or fingers.
Interests	Scientific and technical work; business detail; selling;
Physical Demands	Light work; fingering, writing; talking-ordinary, other types; hearing ordinary conversation; vision- ordinary, within 0.5 metres; standing;

sitting;

Environmental Conditions	Inside, daytime, nights, working around people.

2310.50 LECTURER, INFORMATION TECHNOLOGY

Instructs students at post-secondary institution in information technology:

• Assists in planning course structure in collaboration with head of institution;
• Updates course content to reflect changes in industry
• Advises superior on selection of reading material, software packages and other methods of course delivery;
• Develops course materials including lessons, handouts and examination papers
• Lectures in area of specialty such as computer programming, information systems management, communications, computer systems or computer engineering
• Demonstrates programming techniques and operation of controls on computer hardware and supervises students during practical sessions and field trips;
• Evaluates students on basis of course work and examinations and maintains student records;
• Supervises student projects at undergraduate and postgraduate levels
• Attends staff meetings to schedule and structure examinations and report on work coverage
• Counsels students on academic and career matters;
• Keeps abreast of industrial trends to develop and update teaching materials.

May design and deliver customized programmes to meet client needs and conduct research.

RELATED TITLES
LECTURER, COMPUTER SCIENCE
LECTURER, COMPUTER SYSTEMS
LECTURER, COMPUTER ENGINEERING

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Undergraduate or Postgraduate Degree in Computer Science, Information Technology or Computer Engineering; professional teaching qualification; teaching, industrial or research experience.

OCCUPATIONAL PROFILE

Data/People/Things: **Education & Training**	Integrating data; instructing others; operating-controlling equipment;
Development:	University first degree
Special Vocational Preparation:	Over three years, up to and including five years
Temperaments:	Planning, directing and controlling an activity, dealing with people; influencing others, evaluation of information using judgmental criteria; precise attainment of set limits and standards; team work.

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Aptitudes:	Good communication skills; numerical skills; ability to perceive details in objects or in verbal/tabular/graphic material;
Interests:	Leading and influencing others;
Physical demands:	Light work, handling, fingering, writing, speaking, hearing, vision - normal, field of vision, standing, walking, sitting;
Environmental Conditions:	Inside, daytime, night-time, working around people.

2310.60 COMPUTER EDUCATON COORDINATOR
trains teaching and support staff to effectively incorporate technology tools into classroom instruction

- Assists with design and development of college and campus technology plans
- Designs and conducts projects to enhance teaching and learning through incorporation of instructional technology tools and services
- Provides individualized and classroom-based technical and instructional assistance
- Reviews technology trends and communicates to faculty and support staff
- Evaluates and demonstrates instructional technology hardware and software

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
A Bachelor's degree in a computer-related or instructional technology field and 2 years experience as a teacher/trainer in a higher education institution using technology as a major instructional presentation tool.

OCCUPATIONAL PROFILE

Data/People/Things:	Planning and directing work activities, teaching or training others, setting up equipment;
Education and Training Development:	University first degree
Special Vocational Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Variety and change; direction, control and planning of an activity or project, dealing with people; influencing people; evaluation of information using judgmental criteria, team/group work;
Aptitudes:	Verbal ability, ability to visualise objects in three dimensions from drawings, ability to perceive pertinent details in objects or in pictorial/graphic material, motor coordination, finger dexterity, manual dexterity,
Interest:	Scientific and technical work, leading-influencing.
Physical Demands:	Light work, use of hands and fingers, writing, talking (ordinary, other types), hearing (ordinary , other sounds), ordinary vision , standing, walking, sitting.
Environmental Conditions:	Inside, daytime, working around people,

2432.40 SYSTEMS LIBRARIAN
Manages database software for libraries and provides software support to library staff:

- Keeps abreast of use and administration of databases and other software
- Selects and implements new software in library computer system
- Supervises installation and update of software
- Co-ordinates integration of different databases used in libraries
- Creates new databases to simplify access to electronic library catalogues
- Troubleshoots and resolves computer equipment problems and other system malfunctions
- Interfaces with vendor to resolve problems in administration of software
- Develops and implements software training programs for library staff

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
First Degree in Information Science; postgraduate degree in Information Resources Management or similar; experience as a Librarian.

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating analyses of data to discover facts or develop concepts; teaching or training others; operating-controlling equipment;
Education & Training Development:	Post-graduate university degree
Special Vocational Preparation:	Over five years, up to and including ten years
Temperaments:	Direction, control and planning of an activity or project, evaluation of information using subjective or judgmental criteria; precise attainment of set limits, tolerances or standards;
Aptitudes:	Verbal ability; numerical ability; ability to perceive pertinent details in verbal/tabular material; ability to make precise movements by coordinating eyes, hands and/or fingers; ability to move and work with hands easily and skillfully.
Interests:	Leading and influencing others;
Physical demands:	Light work; handling, fingering, writing, speaking- ordinary, hearing-ordinary, vision- ordinary, close acuity, standing, walking, sitting;
Environmental Conditions:	Inside, daytime, working around people.

2451.42 TECHNICAL WRITER (SOFTWARE DEVELOPMENT)
Documents and edits project plans and publications relating to software development:

- Reviews software requirements with quality control staff and clarifies terminology
- Drafts software guide to aid product development
- Confers with programming staff to verify understanding of requirements
- Edits and proofreads software publications using electronic publishing system
- Ensures compliance with publishing standards and established project plans.

- Updates and maintains software products' User Manuals and Procedural Guides
- Updates and maintains on-line help systems
- Develops glossary of technical terms used in documents
- Updates logs to indicate changes made to software

RELATED TITLES
DOCUMENTATION SPECIALIST (SOFTWARE DEVELOPMENT)

EDUCATION/ TRAINING/ EXPERIENCE REQUIREMENTS:
An Associate Degree in Computer Science or Associate Degree in Business information Systems, exposure to Computer programming and 1-2 years experience in documentation and editing.

OCCUPATIONAL PROFILE

Data/People/Things:	Examining or evaluating data; communicating with people to convey or exchange information; manipulating equipment;
Education & Training Development:	Awards not equivalent to university first degrees, obtained at technical institute, training school, similar institution;
Special Vocational Preparation:	Over 2 years, up to and including 3 years
Temperaments:	Evaluation of information using subjective or judgmental criteria, precise attainment of set limits, tolerances or standards, ability to work as part of a team/group;
Aptitudes:	Ability to comprehend and effectively use language, ability to perceive details/differences in verbal/tabular material; ability to make precise movements by coordinating eyes, hands and/or fingers;
Interests:	Scientific & technical work, business detail;
Physical demands:	Sedentary work, handling, fingering, writing, speaking(ordinary), hearing(ordinary), vision (ordinary and close acuity),
Environmental Conditions:	Inside, daytime, working around people.

3114.07 TECHNICAL SUPPORT SUPERVISOR, INFORMATION TECHNOLOGY/PC Supervisor
Supervises maintenance and repair of computer equipment:

- Examines customer complaints logged by customer service representatives in complaints database and assigns priority to repair jobs
- Schedules technicians for site visits to repair faulty equipment
- Resolves any problems relating to repairs
- Rosters and oversees maintenance of vehicles used for site visits
- Monitors ordering of spare parts for use in repair jobs
- Assigns costs to repair jobs for billing by accounts department
- Supervises technical support staff
- Prepares technical reports for management.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Technical certification in computer maintenance and repair. 3-5 years' working experience in the field.

OCCUPATIONAL PROFILE

Data/People/Things:	Examining and evaluating data; directing work-related activities of a group of workers; handling
Education and Training Development:	Awards not equivalent to university first degrees, obtained at technical institute, training school, similar institution;
Special Vocational Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Planning, directing and controlling an activity or project, dealing with people; evaluation of information using judgmental criteria; precise attainment of set limits and standards; team work.
Aptitudes:	Good communication skills; numerical skills; ability to perceive details in verbal/tabular material;
Interests:	Leading and influencing others;
Physical demands:	Light work; frequent handling, fingering and writing, frequent speaking and hearing, acute vision; standing, walking and sitting;
Environmental Conditions:	Inside, daytime, occasional shift/night work; working around people

3114.17 COMPUTER TECHNICIAN/PC Technician/ System Support Technician
Sets up, maintains and repairs computers and peripheral equipment and/or assists with software and networking problems:

- Sets up computers and related equipment and installs software
- Observes server machines to monitor network activity and detect application, systems and security errors
- Repairs or replaces worn and malfunctioning components
- Contacts vendors or second-level support staff for more complex repairs
- Upgrades computer components and programs to make them more compatible with operating systems
- Provides software and networking support to computer users
- Prepares specifications for purchase of computer hardware and components and contacts suppliers for quotations
- Keeps up to date with technology solutions.
- Prepares technical reports for management.

RELATED TITLES:
COMPUTER MAINTENANCE TECHNICIAN
COMPUTER SERVICE TECHNICIAN
HARDWARE SUPPORT REPRESENTATIVE
HARDWARE TECHNICIAN
INFORMATION TECHNOLOGY DESKTOP TECHNICIAN

INFORMATION TECHNOLOGY TECHNICIAN
NETWORK SUPPORT TECHNICIAN
NETWORK TECHNICIAN
P.C. HARDWARE SUPPORT OFFICER
SOFTWARE TECHNICIAN

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Five years of secondary education; technical certification such as A+, CompuTIA A+ and
Network+; at least 1 year's experience in computer maintenance and repairs.

OCCUPATIONAL PROFILE

Data/People/Things:	Examining and evaluating data; communicating with people to convey or exchange information; precision-work;
Education and Training Development:	Tertiary education, not equivalent to university first degree, obtained at technical institute, training school etc
Special Vocational Preparation:	Over 2 years, up to and including 3 years
Temperaments:	Dealing with people; evaluation of information using judgmental criteria; precise attainment of set limits, tolerances or standards;
Aptitudes:	Numerical skills; ability to visualize objects in three dimensions from drawings/representations, ability to perceive details in objects or in graphic material, ability to perceive details in verbal/tabular material; manual and finger dexterity.
Interests:	Scientific and technical work;
Physical demands:	Medium work; lifting, carrying, stooping, crouching, handling, fingering, writing, speaking, hearing, vision- normal and near acuity,, standing, walking, sitting;
Environmental Conditions:	Inside, daytime, shift/on call, working around people, low-level

3121.15 COMPUTER PROGRAMMER/Application Programmer
Writes programs in required computer language for processing information:

- Analyses data processing design specifications to formulate program modules;
- Defines logic of each module to attain desired results;
- Codes program in specified programming language;
- Keys in code on computer terminal;
- Tests program function and checks computer output for errors, modifying program as necessary;
- Maintains documentation of program logic and documents operational procedure;
- Modifies existing programs to meet changing user requirements
- Designs applications programs and trains end-users
- May liaise with user departments to make program maintenance changes and research solutions to program-related problems.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Technical certification and experience in one or more programming language. An undergraduate degree in Information Systems or Computer Science is often desirable.

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating analyses of data; communicating with others; operating-controlling computer;
Education and Training Development:	University first degree;
Special Vocational Preparation:	Over 2 years, up too and including 3 years
Temperaments:	Dealing with people; evaluation of information using judgmental criteria; precise attainment of set limits and standards; team work.
Aptitudes:	Good communication skills; numerical skills; ability to perceive details in graphic/verbal/tabular material; motor coordination, manual and finger dexterity;
Interests:	Scientific and technical work; business detail;
Physical demands:	Sedentary work; handling, fingering, some writing; some speaking and hearing, normal and acute vision and ability to adjust focusing, sitting;
Environmental; Conditions:	Inside, daytime work around people; some extended work hours.

3122.05 SUPERVISOR, ELECTRONIC DATA PROCESSING

Supervises electronic processing of data and ensures maintenance of proper safeguards and records:

- Determines sequence of data-processing activities and schedules jobs;
- Assigns duties and advises on factors such as availability of memory and deletion of unwanted files
- Supervises data entry and processing and distribution of computer output;
- Advises on feasibility of programs from operational points of view:
- Reports and requests assistance in dealing with hardware problems;
- Ensures creation of back-up copies and security of data-storage media;
- Ensures proper control of new and used computer stock and stationery and reviews reports on rate of use;
- Responds to queries on work-in-progress and availability of data.
- Responds to requests for enhanced processing and/or outputs.

RELATED TITLES
CONTROL SUPERVISOR, ELECTRONIC DATA PROCESSING
DATA ENTRY SUPERVISOR
SUPERVISOR, COMPUTER OPERATIONS

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
5 CXC/GCE 'O'Level passes including English and Maths and 3-5 years' experience in a computer environment.

OCCUPATIONAL PROFILE

Data/People/Things:	Planning and directing work activities; supervising others; handling;
Education and Training Development:	Forms 4 & 5, CXC/GCE 0-Level;
Special Vocational Preparation:	Over 3 years, up to and including 5 years
Temperaments:	Ability to direct, control and plan activities; dealing with people; evaluating information; precise attainment of set limits, tolerances or standards;
Aptitudes:	Good communication skills; numerical skills; ability to perceive details in verbal/ graphic or graphic material;
Interests:	Business detail;
Physical demands:	Sedentary-Light work, use of hands and fingers with some writing, speaking and hearing, normal vision; standing, walking and sitting;
Environmental Conditions:	Inside work, daytime or shift.

3122.10 COMPUTER OPERATOR

Operates and controls computer to process business, scientific, engineering and/or other data according to operating instructions:

- Sets control switches on computer and peripheral equipment to integrate and operate equipment according to programs utilised;
- Selects and loads input and output units with storage devices and paper for operating run;
- Operates equipment to process data as assigned;
- Monitors jobs being processed, observes equipment or control panel on computer console for error lights, error messages, stoppages and faulty output and takes corrective action;
- Removes, separates and sorts printed output at end of run;
- Records operating data such as on-line time, reference number and subject matter;
- Performs simple maintenance of computer and peripheral equipment
- Performs back-up of system.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
5 'O' Levels including Mathematics and English;
Post-secondary training and certification in Computer Operations;

OCCUPATIONAL PROFILE

Data/People/Things:	Transcribing, entering or posting data; communicating with others; operating/controlling equipment;
Education and Training Development:	Forms 4 & 5, CXC/GCE 0-Level;
Special Vocational Preparation:	Over 2 years, up too and including 3 years
Temperaments:	Adaptable to repetitive work, precise attainment of set limits tolerances or standards;

Aptitudes:	Ability to perceive details in verbal/ tabular material; manual and finger dexterity;
Interests:	Business detail;
Physical demands:	Sedentary work, frequent use of hands and fingers with some writing, some speaking and hearing, vision - close acuity and ability to adjust focusing, standing/walking/sitting;
Environmental Conditions:	Inside work, daytime or shift.

3129.15 HELP DESK ANALYST, INFORMATION TECHNOLOGY /Help Desk Officer, Information Technology

Provides first level technical support to computer users experiencing problems with computer hardware, applications and communications software:

- Answers questions from users (in person, by phone and via email) to resolve problems such as connectivity to computer network and Internet, use of personal computers and software applications
- Refers more serious problems to second-level support staff or specialized departments for resolution
- Maintains problem and solution log for use by support staff
- Monitors follow-up by support technicians until resolution of problem
- Performs daily administrative tasks, including generating, updating and drafting documents such as job cards for technicians
- Prepares shift status reports for review by incoming shift supervisor
- Notifies management of significant developments and problem trends
- Assists with and maintains help desk database

May research and implement solutions by consulting technical manuals and other documents

RELATED TITLES:
CALL CENTRE ANALYST, INFORMATION TECHNOLOGY

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Five years of Secondary education, post-secondary training in Computer Science, Computer Programming or Network Administration, one-two years' experience in a related position.

OCCUPATIONAL PROFILE

Data/People/Things:	Examining and evaluating data, communicating with people, operating-controlling equipment;
Education and Training Development:	Level 3- CXC/GCE O Level
Special Vocational Preparation:	Over 2 years, up to and including 3 years
Temperaments:	Dealing with people beyond giving and receiving instructions; evaluation of information; precise attainment of set limits, tolerances and standards; team/group work;
Aptitudes:	Communication skills; numerical skills, ability to perceive details in graphic, verbal/ tabular material, motor coordination;

Interest:	Scientific & technical work; business detail;
Physical Demands:	Sedentary work, frequent use of hands and fingers with some writing, frequent speaking and hearing, vision (ordinary, acuity within 0.5 metres, ability to adjust focusing), sitting;
Environmental Conditions:	Inside work, daytime or shift.

3129.25 WEB DESIGNER/Web Developer

Designs and modifies Internet websites for employer or client companies and maintains published websites:

- Researches subject matter and other factors such as client objectives and nature of target audience;
- Advises on approaches to web design that will satisfy client objectives;
- Determines website style and plans layout and navigation schemes;
- Ensures accessibility of information on site;
- Builds, debugs and refines web Templates;
- Redesigns existing websites based on client requests;
- Maintains published websites by intermittently reviewing design and updating elements of site to maintain quality.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Secondary School education;
Training/ Certification in Web Design/Graphic Design; one-two years related work experience.

OCCUPATIONAL PROFILE

Data/People/Things:	Integrating analyses of data to develop concepts, communicating with people, operating-controlling equipment;
Education and Training Development:	
Special Vocational Preparation:	
Temperaments:	Direction, control and planning of an activity or project, dealing with people beyond giving and receiving instructions; evaluation of information using subjective or judgmental criteria; artistic interpretation of feelings, ideas or facts; precise attainment of set limits, tolerances or standards; teamwork.
Aptitudes:	Good communication skills; numerical skills, ability to perceive details in pictorial/graphic and verbal/ tabular material, motor coordination;
Interests:	Artistic/creative expression of feelings or ideas, scientific & technical work; business detail;
Physical demands:	Sedentary work, frequent use of hands and fingers with some writing, frequent speaking and hearing, vision- ordinary, within 0.5 metres, ability to adjust focusing; sitting;
Environmental Conditions:	Inside, working around people.

4114.10 DATA-ENTRY OPERATOR/Data-Entry Clerk
Enters data from source documents into computer records using computer keyboard:

- Types data from source document into computer system;
- Compares input data with source documents to verify accuracy
- Copies verified file into central system
- Retrieves and prints required files
- Reports errors or failure;

May keep record of completed work.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Five CXC/GCE 'O'Level passes, computer literacy as evidenced by a certificate from a recognized institution, typing skills.

OCCUPATIONAL PROFILE

Data/People/Things:	Transcribing, entering or posting data; carrying out assigned work, Manipulating;
Education and Training Development:	Forms 4 & 5, CXC/GCE 0-Level;
Special Vocational Preparation:	Over 6 months, up to and including 1 year
Temperaments:	Repetitive or short-cycle work; doing things only under specific instructions; precise attainment of set limits, tolerances or standards;
Aptitudes:	Ability to perceive details in graphic, verbal/ tabular material, motor coordination with manual and finger dexterity;
Interests:	Business detail;
Physical demands:	Sedentary work, frequent use of hands and fingers; some speaking and hearing, acute vision with some ability to adjust focusing, sitting;
Environmental Conditions:	Inside work, daytime, some shift or night work.

4132.20 CONTROL CLERK, ELECTRONIC DATA PROCESSING
Controls flow of data processing documents and maintains accurate records:

- Records and checks documents coming into and leaving the data processing department
- Dispatches work to relevant sections in a timely and prescribed manner
- Verifies accuracy of reports or output documents after processing
- Distributes output to other departments
- Records control forms before and after processing
- Compiles daily work log and prepares and balances periodic reports

RELATED TITLES
CONTROL SCHEDULING CLERK
DATA CLERK

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
Five CXC/GCE 'O'Level passes and three to six months of on- the- job training.

OCCUPATIONAL PROFILE

Data/People/Things:	Transcribing, entering or posting data; communicating with people to convey or exchange information; handling
Education and Training Development:	Forms 4 & 5, CXC/GCE 0-Level;
Special Vocational Preparation:	Over 3 months, up to and including 6 months
Temperaments:	Precise attainment of set limits, tolerances or standards;
Aptitudes:	Ability to perceive pertinent details in verbal/ tabular material;
Interests:	Business detail;
Physical Demands:	Sedentary work, some lifting and carrying, frequent use of hands and fingers and writing, some speaking and hearing, acute vision, some standing and walking but mainly sitting;
Environmental Conditions:	Inside work, possibility of shift work; working around people.

4141.25 ELECTRONIC-DATA-PROCESSING LIBRARIAN
Maintains collection of storage media used for electronic data processing:

- Examines work schedule or liaises with computer users to ascertain storage media required;
- Selects and forwards storage media to processing rooms, ensures that items are returned after use and replaces on storage shelves or racks;
- Affixes labels to or writes data on storage media, to indicate content and date of use or ensures proper labeling by users
- Assigns control numbers according to system used by establishment;
- Transfers tapes to scratch pool for re-use after specified time lapse;
- Monitors stock of storage media and informs relevant person when stocks are low;
- Reviews collection periodically to ensure proper storage;
- Maintains records of file names, control or serial numbers and storage locations.
- May maintain record of materials issued to users and requisition, store and control stationery and other supplies for electronic data processing.

EDUCATION/TRAINING/EXPERIENCE REQUIREMENTS:
5 CXC/GCE 'O'Level passes and 6 months to 1 year on-the-job experience.

OCCUPATIONAL PROFILE

Data/People/Things:	Gathering, collating or classifying data; communicating with people to convey or exchange information; handling
Education and Training Development:	Forms 4 & 5, CXC/GCE 0-Level;
Special Vocational Preparation:	Over 3 months, up to and including 6 months
Temperaments:	Evaluation of information using subjective or judgmental criteria;

Aptitudes:	Ability to perceive pertinent details in objects or in pictorial/graphic material; ability to perceive pertinent details in verbal/ tabular material;
Interests:	Business detail;
Physical demands:	Sedentary work, some lifting and carrying, frequent use of hands and fingers and writing, some speaking and hearing, acute vision, some standing and walking but mainly sitting;
Environmental Conditions:	Inside, daytime work, possibility of night work.

ALPHABETICAL INDEX

The Alphabetical Index has been designed to reflect various types of titles. The same kind and size of type is used as that used to differentiate titles in the actual occupational description. Base titles are in **BOLD-FACE, UPPER-CASE LETTERS**; alternate titles are in **Bold-Face, Upper/Lower Case Letters**; related titles are in UPPER-CASE LETTERS. Some titles listed in the Alphabetical Index, do not appear on occupational descriptions. Their six-digit code number refers to the description to which they are affiliated.

DIRECTOR, INFORMATION NETWORKS DIVISION	1226.10
DIRECTOR, INTERNET SERVICES	1226.10
DIRECTOR, SYSTEMS DEVELOPMENT	1226.10
DOCUMENTATION SPECIALIST (SOFTWARE DEVELOPMENT)	2451.42
E-BUSINESS CONSULTANT	2131.50
ELECTRONIC-DATA-PROCESSING LIBRARIAN	4141.25
Enterprise Solutions Manager	2131.70
HARDWARE SUPPORT REPRESENTATIVE	3114.17
HARDWARE TECHNICIAN	3114.17
HELP DESK ANALYST, INFORMATION TECHNOLOGY	3129.15
Help Desk Officer, Information Technology	3129.15
Information and Communication Technology Sales Executive	2131.70
INFORMATION AND COMMUNICATIONS TECHNOLOGY SALES PROFESSIONAL	2131.70
INFORMATION SECURITY ADMINISTRATOR	2131.52
Information Systems Administrator	2131.12
INFORMATION SYSTEMS AUDITOR	2131.65
INFORMATION SYSTEMS COORDINATOR	1226.10
Information Technology Support Officer	2131.40
Information Technology Administrator	2131.12
Information Technology Auditor	2131.65
INFORMATION TECHNOLOGY CONSULTANT	2131.10
Information Technology Coordinator	2131.05
INFORMATION TECHNOLOGY DESKTOP TECHNICIAN	3114.17
INFORMATION TECHNOLOGY SUPERVISOR	2131.05
INFORMATION TECHNOLOGY TECHNICIAN	3114.17
Information Technology Support Officer	2131.40
Information Technology Support Technician	3114.17
INTERNAL AUDITOR, INFORMATION TECHNOLOGY	2131.65
JAVA PROGRAMMER	3121.15
LAN ADMINISTRATOR	2131.14
LAN SPECIALIST	2131.25
LEAD ANALYST PROGRAMMER	2131.05
LECTURER, COMPUTER ENGINEERING	2310.50
LECTURER, COMPUTER SCIENCE	2310.50
LECTURER, COMPUTER SYSTEMS	2310.50

LECTURER, INFORMATION TECHNOLOGY	2310.50
MANAGEMENT INFORMATION SYSTEMS MANAGER	1226.10
MANAGEMENT INFORMATION SYSTEMS OFFICER	2131.40
MANAGER, COMPUTER OPERATIONS	1226.10
MANAGER, ELECTRONIC DATA PROCESSING	1226.10
MANAGER, INFORMATION SECURITY	1226.10
Manager, Information Systems	1226.10
MANAGER, INFORMATION TECHNOLOGY	1226.10
MANAGER, INFORMATION TECHNOLOGY SECURITY AND QUALITY	1226.10
MANAGER, NETWORK SECURITY	1226.10
NETWORK ADMINISTRATOR	2131.14
NETWORK AND DATACOM SUPERVISOR	2131.05
NETWORK AND SYSTEMS PLANNING SENIOR CONSULTANT	2131.10
NETWORK ENGINEER	2131.25
NETWORK ENGINEER, DATA SYSTEMS	2131.25
NETWORK ENGINEER, VOICE SYSTEMS	2131.25
Network Infrastructure and Delivery Administrator	2131.14
NETWORK SECURITY OFFICER	2131.52
Network Services Administrator	2131.14
NETWORK SERVICES MANAGER	1226.10
Network Specialist	2131.14
NETWORK SUPPORT TECHNICIAN	3114.17
NETWORK TECHNICIAN	3114.17
NETWORKING SUPERVISOR	2131.05
PC HARDWARE SUPPORT OFFICER	3114.17
PC Network Specialist	2131.14
PC Supervisor	3114.07
PC Technician	3114.17
PROGRAMMER/ANALYST	2131.45
QUALITY ASSURANCE ANALYST, INFORMATION TECHNOLOGY	2131.55
Quality Control Officer, Information Technology	2131.55
REGIONAL ICT BUSINESS DEVELOPMENT MANAGER	2131.70
SENIOR MANAGER, PROCESSING SYSTEMS	1226.10
SITE MANAGER, DIGITAL BUSINESS	1226.10
SOFTWARE ENGINEER	2131.30
SOFTWARE ENGINEER, BUSINESS SYSTEMS	2131.30

SOFTWARE ENGINEER, OFFICE AUTOMATION	2131.30
SOFTWARE SUPPORT SPECIALIST	2131.40
SOFTWARE TECHNICIAN	3114.17
SOLUTIONS SALES PROFESSIONAL	2131.70
SPECIALIST ENGINEER, NETWORKING AND SECURITY	2131.25
SUPERVISOR, COMPUTER OPERATIONS	3122.05
SUPERVISOR, ELECTRONIC DATA PROCESSING	3122.05
SUPPORT ANALYST, INFORMATION TECHNOLOGY	2131.40
System Support Technician	3114.17
SYSTEMS ADMINISTRATOR	2131.12
SYSTEMS ADMINISTRATOR, CLIENT SYSTEMS	2131.12
SYSTEMS ADMINISTRATOR, MIDRANGE SYSTEMS	2131.12
SYSTEMS ADMINISTRATOR, NETWORK SYSTEMS	2131.12
SYSTEMS ADMINISTRATOR, OPERATING SYSTEMS	2131.12
SYSTEMS ADMINISTRATOR, SERVER SYSTEMS	2131.12
SYSTEMS ANALYST	2131.20
Systems Developer	2131.30
SYSTEMS ENGINEER	2131.15
SYSTEMS LIBRARIAN	2432.40
TECHNICAL APPLICATIONS SUPPORT ANALYST	2131.40
TECHNICAL SUPPORT SUPERVISOR, INFORMATION TECHNOLOGY	3114.07
TECHNICAL WRITER (SOFTWARE DEVELOPMENT)	2451.42
VOICE ENGINEER	2131.25
WAN ADMINISTRATOR	2131.14
Web Administrator	2131.60
Web Content Administrator	2131.60
WEB CONTENT MANAGER	2131.60
WEB DESIGNER	3129.25
Web Developer	3129.25
WEBMASTER	2131.60