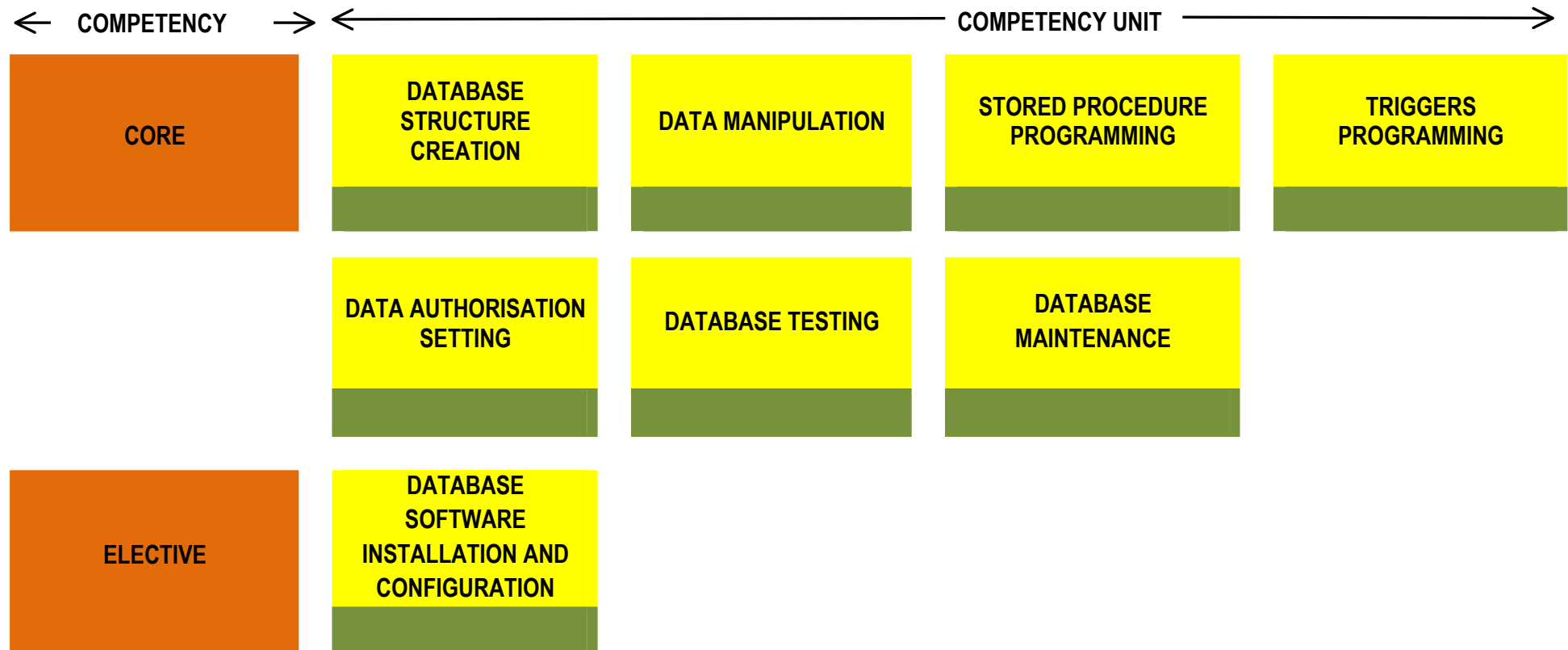


# JOB PROFILE CHART (JPC)

<b>SECTOR</b>	<b>INFORMATION AND COMMUNICATIONS TECHNOLOGY</b>		
<b>SUB SECTOR</b>	<b>APPLICATION SYSTEM DEVELOPMENT</b>		
<b>JOB AREA</b>	<b>DATABASE PROGRAMMING</b>		
<b>JOB LEVEL</b>	<b>FOUR (4)</b>	<b>JOB AREA CODE</b>	



## COMPETENCY PROFILE (CP)

<b>Sub Sector</b>	APPLICATION SYSTEM DEVELOPMENT			
<b>Job Area</b>	DATABASE PROGRAMMING			
<b>Level</b>	FOUR (4)			
<b>CU Title</b>	<b>CU Code</b>	<b>CU Descriptor</b>	<b>CU Work Activities</b>	<b>Performance Criteria</b>
1. Database structure creation		Database structure creation competency unit describes knowledge, skill and attitude required by a person to develop database structure according to data design requirements. The personnel who are competent in database structure creation shall be able to identify data design requirements, create schema, table and views statement script and evaluate database structure in accordance with current industry standard, ISO/IEC 9075.	<ol style="list-style-type: none"> <li>1. Identify data design requirements</li> <li>2. Plan database structure creation activities</li> <li>3. Perform database structure creation</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Business flow and user requirements determined</li> <li>1.2 Data design requirements determined</li> <li>2.1 Database structure creation activities prioritised and arranged</li> <li>2.2 Database structure creation activities workflow listed out</li> <li>3.1 Database schema script and table statement script produced</li> <li>3.2 Database schema, table and view statement script executed using database tools</li> <li>3.3 Database connectivity test executed and assessed</li> </ol>

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Evaluate database structure  5. Produce database structure creation report	4.1 Statement, table and view statement issues rectified and modified 4.2 Database structure checked and verified according to data design requirement  5.1 Database structure creation report prepared according to company report format 5.2 Database structure documents compiled for further reference
2. Data manipulation		Data manipulation competency unit describes the knowledge, skill and attitude required by a person to manipulate data into the desired format and configuration. It involves a range of process known as CRUD (Create, Read, Update and Delete). The personnel who are competent in data manipulation shall be able to carry out CRUD statement query using Data Manipulation Language (DML) and evaluate CRUD statement .	1. Analyse data manipulation requirements  2. Establish data CRUD statement  3. Carry out data sampling activity	1.1 User requirements studied 1.2 Database structure design determined  2.1 Data manipulation query statement verified according to user requirements 2.2 User privileges and access condition verified  3.1 Sample data format verified 3.2 Sample data migrated using database management tools

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Perform data manipulation activities  5. Evaluate CRUD statement and data integrity  6. Produce data manipulation report	4.1 INSERT, SELECT, UPDATE and DELETE statement query executed.  5.1 CRUD statement checked 5.2 Data integrity verified  6.1 Data manipulation report prepared according to company's report format 6.2 Data manipulation report documented for further reference
3. Stored procedure programming		Stored procedure programming competency unit describes knowledge, skill and attitude required by a person for data validation to avoid data error. The personnel who are competent in stored procedure programming shall be knowledgeable in common database platforms and shall be able to create stored procedure programming script and handle data error.	1. Analyse stored programming requirements  2. Plan stored procedure programming workflow  3. Create stored procedure statement	1.1 Stored Procedure to be implemented identified 1.2 Database structure studied  2.1 Stored procedure programming workflow defined 2.2 Stored procedure parameter's values determined  3.1 Stored Procedure programming script produced 3.2 Stored procedure script performed.

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Carry out stored procedure statement  5. Verify stored procedure functionality  6. Produce stored procedure programming report	4.1 RETURN Statement output checked 4.2 Parameter's values tested  5.1 Error resolved  5.2 Stored Procedure statement output verified  6.1 Stored procedure programming report generated according to company's report format
4. Triggers programming		Triggers programming competency unit describes knowledge, skill and attitude required by a person for keeping the integrity of the information on the database. The personnel who are competent in triggers programming shall be able to create triggers programming script, handle errors and test triggers functionality.	1. Identify triggers programming requirements  2. Plan triggers programming workflow  3. Create triggers statement	1.1 Data design structure requirement determined 1.2 Triggers features and functionality determined  2.1 Triggers programming workflow determined 2.2 Triggers physical design determined  3.1 Triggers programming script developed 3.2 Triggers executed using database tools

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			<ul style="list-style-type: none"> <li>4. Test triggers functionality</li> <li>5. Produce triggers programming report</li> </ul>	<ul style="list-style-type: none"> <li>4.1 Database tested</li> <li>4.2 Errors resolved</li> <li>5.1 Triggers programming report generated according to company's report format</li> </ul>
5. Data authorisation setting		Data authorisation setting competency unit describes the knowledge, skill and attitude required by a person to set authorisation level of database users. The personnel who are competent in data authorisation setting shall be able to interpret business process, user work flow so that users' authorisation level could be set according to the organisation's requirement.	<ul style="list-style-type: none"> <li>1. Analyse data authorisation setting requirements</li> <li>2. Plan data authorisation setting activities</li> <li>3. Perform data authorisation level setting</li> <li>4. Produce data authorisation setting report</li> </ul>	<ul style="list-style-type: none"> <li>1.1 Data design requirements interpreted</li> <li>1.2 Company's data authorisation setting requirement determined</li> <li>3.1 Business process and workflow interpreted</li> <li>3.2 Data authorisation setting activities outlined</li> <li>3.3 Authorisation level determined</li> <li>3.4 Data authorisation setting executed according to company's requirement</li> <li>4.1 Data authorisation setting report prepared according to company's report format</li> </ul>

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
6. Database testing		Database testing competency unit describes knowledge, skill and attitude required by a person to protect database from threats within data and interface level. The personnel who are competent in database testing shall be able to create sample data, create test script, and populate test data to verify any defects within the database.	<ol style="list-style-type: none"> <li>1. Analyse database testing requirements</li> <li>2. Study test script</li> <li>3. Populate test data</li> <li>4. Carry out database testing</li> <li>5. Produce database testing report</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Application requirements and user requirements interpreted</li> <li>1.2 Types of database testing identified</li> <li>1.3 Dataflow determined</li> <li>2.1 System flowchart interpreted</li> <li>2.2 Test script analysed</li> <li>2.3 Types of data testing determined</li> <li>3.1 Data sampling established</li> <li>3.2 Test script executed</li> <li>4.1 Types of testing and technique determined</li> <li>4.2 Database testing executed</li> <li>4.3 Application input and output verified</li> <li>5.1 Database testing report generated according to company's report format</li> </ol>

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
7. Database maintenance		Database maintenance competency unit describes knowledge, skill and attitude required by a person to perform a periodic basis task to ensure backup procedures and other disaster recovery tasks are being performed. The personnel who are competent in database maintenance shall be able to execute database backup and replication to protect data loss, perform consistency and integrity checks to ensure data and indexes are not corrupted and regularly rebuilding indexes to compact and defragment the database	<ol style="list-style-type: none"> <li>1. Analyse database maintenance requirements</li> <li>2. Plan database maintenance activities</li> <li>3. Perform database maintenance</li> <li>4. Verify database maintenance activities</li> <li>5. Produce database maintenance report</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Data design studied</li> <li>1.2 Application process interpreted</li> <li>1.3 Types of database maintenance identified</li> <li>2.1 Database maintenance activities determined</li> <li>2.2 Database maintenance schedule prepared according to database maintenance requirements</li> <li>3.1 Database back up activity implemented according to maintenance schedule and back up strategy</li> <li>3.2 Database maintenance script interpreted</li> <li>4.1 Database performance status validated</li> <li>4.2 Database confidentiality, integrity and availability validated</li> <li>5.1 Database maintenance report prepared according to company's report format</li> </ol>



CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
8. Database software installation and configuration		Database software installation and configuration competency unit describes knowledge, skill and attitude required by a person to prepare the database programming platform according to database specifications and installation manual. The personnel who are competent in database software installation and configuration shall be able to install the software into database server and client server and configure it.	<ol style="list-style-type: none"> <li>1. Analyse database software installation and configuration requirements</li> <li>2. Plan database software installation and configuration activities</li> <li>3. Perform database software installation and configuration</li> <li>4. Produce database installation and configuration report</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Database software requirement interpreted</li> <li>1.2 Installation and configuration manual interpreted</li> <li>2.1 Database software determined</li> <li>2.2 Types of server and client server determined</li> <li>3.1 Database server installation executed according to installation manual</li> <li>3.2 Database server configuration executed according to configuration manual</li> <li>3.3 Database client installation executed according to installation manual</li> <li>3.4 Database client configuration executed according to configuration manual</li> <li>4.1 Database installation and configuration report prepared according to company's report format</li> </ol>