SOFTWARE DEVELOPMENT CONTENT L3, L4 & L5

L3 CONTENT

General introduction to the computer logics and computer architecture
Computer troubleshooting
Peripherals installation and configuration
Computer hardware maintenance
Computer software maintenance
Introduction to computer networks
Small office/home office LAN setup
Wireless LAN
Graphic design basics
Keyboard skills
Logo and banner design
Advanced powerpoint presentation
Advanced spreadsheets

L4 CONTENT

Specific competence to implement	Activities to carry out	Performance criteria
Algorithm fundamentals	Apply algorithm fundamentals	1. Describe basic concepts of algorithm 2. Apply programming structures **3. Describe data structures**
Programming fundamentals	Programming fundamentals	**1. Describe basic concepts of** programming 2. Apply declaration of variables, it's datatypes and operators 3. Apply conditional and control flow 4. Apply basic object-oriented programming **5. Perform program codes**
Website business requirements analysis:	Collect client website requirements	1. Proper analysis of ideas for communication to others 2. Stimulation of relevant response and reaction in relation with business sector 3. Proper description of client's demand
	Brainstorm ideas about collected requirements	1. Proper identification of key information according to the user's requirements 2. Proper discussion of ideas as per the proposed requirements 3. Proper data analysis and review in relation with client's requirements

	Analyze website requirements	1. Adequate interpretation of website requirements in accordance with client's requirements 2. Appropriate client's business sector review in accordance with website requirements 3. Appropriate definition of service to be provided to the clients according to their requirements
	Produce a feasibility project proposal	1. Appropriate confirmation of a website specifications and examination of alternatives in accordance with proposed cost and timeframe 2. Correct adjustments of the proposal according to the client's feedback 3. Proper publication f feasibility project proposal with reference to client requirements
Basics and fundamentals of database	Analyze database requirements	1. Proper definitions of database key terms, types of database models, and relationships 2. Proper review of organizational and task requirements to identify user requirements 3. Proper determination of the information that the database is required to hold
	Design database	1. Adequate design of an entity relationship diagram(ERD) 2. Proper identification of constraints 3. Adequate development of data dictionary

	Create database	1. Proper creation of table and attributes 2. Proper creation of views 3. Proper management of access control of database
Website and database integration	Connect to the database	1. Proper review of the importance and strategies of database and website integration 2. Selection of connection tools and platforms according to the application specifications 3. Proper connection of the database to a web application using server-side script languages 4. Effective connection management based on transactions
	Implement CRUD operation	1. Correct data insertion using structured query language (SQL) in reference to standard queries 2. Correct retrieval of the ata in the most appropriate control according to the information requirements and display it to the web pages 3. Accurate data update with user-supplied input according to the information requirements.
	Create reports to present summary information	1. Proper display of general data from database accordion to the information requirements 2. Appropriate creation of specific report based on user-supplied input data 3. Clear preparation of customized and periodic

		reports according to information requirements
Web design	- Design simple website layouts - Develop cascading style sheets - Ensure website content meets technical protocols and standards - Produce interactive web animation - Integrate social web technologies - Website deployment - Website maintenance - Algorithm fundamentals	

L5 CONTENT

Specific competent to implement	Activities to carry out	Performance criteria
Database development	**Perform database structure**	1. proper introduction to SQL 2. Effective creation of database 3. Accurate creation of tables with attributes 4. Proper use of SQL constraints 5. Neat refining of database design
	Apply DML queries	1. Proper execution of database insert operation 2. Correct retrieval of row and column data from tables using SELECT statement 3. Proper creation of reports sorted and

		restricted data
		4. Proper use of single row functions to generate and retrieve customized data
		5. Appropriate report aggregated data using group functions
		6. Correct retrieval of data from multiple tables using joins
		7. Correct use of subqueries to solve problems
		8. Correct use of set operators
		9. Correct use of data manipulation language (DML) statements to update table data
		10. Proper execution of database procedures, index
	Interact with database	1. Proper identification of different data file formats
		2. Proper correlation of data format and database
		3. Proper execution of import data from external source
		4. Proper execution of export of data to external source
Database security	**Describe database security concepts and standards**	1. Proper description of the scope of database security
		2. Correct elaboration of database security models
		3. Relevant exploration of database security principles
	Perform system security	1. Appropriate definition of system security coverage
		2. Efficient management of users in accordance with the system roles and privileges
		3. Suitable validation user accounts
	Perform object security	1. Convenient implementation of data security policies in line with object privilege and roles
		2. Correct implementation of data security policies in line with data protection requirements
		3. Regular backup of data and data restore
	Conduct database auditing	1. Proper description for audition types, and records

		2. Complete inspection of database security standards 3. Efficient production of auditing report
Web application development	Apply PHP fundamentals	1. Proper definition of PHP and its basics 2. Effective description of syntax, data types, variables, operators, and arrays 3. Proper introduction of comments 4. Complete installation and configuration of PHP server
	Implement PHP logic	1. Proper use of program flow control 2. Effective use of functions 3. Effective of file processing 4. Proper handling of errors and exceptions
	Perform PHP MySQL Database interactions	1. Proper connection and access of MySL database 2. Proper management of sessions and cookies 3. Correct implementation of database CRUD operations 4. Proper management of dynamic forms
	Use PHP frameworks	1. Proper introduction to frameworks 2. Effective implementation of CakePHP framework 3. Effective implementation Laravel framework
Additional Content from the logbooks	System analysis and design	Using the system analysis and design tools and system design model even SDLC, analyze and design a system: Note: you will develop the system theoretically. - I need a topic of a project and a case study of that project.
	Web application development	Design a simple web application which will let the user add, remove and update information stored in the database.
	Design new system	1. Proper intro to system design 2. Proper performance of logical design
	Create small application in Python	1. Adequate introduction of python small application 2. Proper manipulation of JSON data 3. Proper manipulation of email with JSON data
	Perform database structure	1. Proper intro to SQL

	Execute SQL Queries	2. Effective creation of database and tables with attributes 3. Proper use of SQL constraints 4. Proper execution of database insert, select operation 5. Proper execution of database update, delete operation 6. Proper execution of database functions, joins, nested queries 7. Proper execution of database procedures, index
	Integrated database with website	1. Connect to the database and implement crud operations 2. Create reports to present summary information
	Perform PHP MySQL Database interactions	1. Proper connection and access to MySQL Database 2. Proper management of sessions and cookies 3. Correct implementation of database CRUD Operations 4. Proper management of dynamic forms
	Analyze software development requirements	1. Right exploration of deployment server in line with application requirements. 2. Appropriate interpretation of hardware and software requirements.