061306T4CSC

COMPUTER SCIENCE LEVEL 6

ICT/OS/CS/CR/04/6/A

Understand Fundamentals of Programming

March/April 2025

TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

PRACTICAL ASSESSMENT

TIME: 4 HOURS

INSTRUCTIONS TO CANDIDATE:

1. You are required to perform the following tasks
   i. *Develop a Parking Lot Management System*
   ii. *Build a Weather-Based Crop Recommendation System*
2. You have been provided with the following resources for the practical tasks:

- *Functional computer installed with appropriate Java IDE/Compiler*
- *Plain paper*

Task 1: Develop a Parking Lot Management System.

You are required to develop a **Parking Lot Management System** that adheres to a number of functional and technical requirements. The system manages the flow of cars entering and exiting the parking lot, track available spaces, and provide real-time status updates. Implement the following activities.

1. Set the maximum capacity of the parking lot to 10.
2. Set-up a basic menu driven system to interact with the user
3. Implement Car entry functionality-Add a new car into the parking lot. Implement a condition to check availability of space before adding a new entry.
4. Display an appropriate message for successful addition and when the lot is full.
5. Implement the car exit functionality- decrement the car count when a car exits. Implement a condition to ensure the parking lot is not empty before exiting the parking lot.
6. Display the current number of cars in the lot
7. Test the program with various scenarios

Sample Basic Menu Driven User Interface


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Welcome to the Parking Lot Management System!
Please select an option from the menu:

1. Set Parking Lot Capacity
2. Car Enters
3. Car Exits
4. View Parking Lot Status
5. Exit
Enter your choice: 3

Car exited the lot. Current occupancy: 0/5 cars.
Notice: The parking lot is EMPTY.
```

Task 2: Build a Weather-Based Crop Recommendation System.

The table below outlines a list of crops that are best suited to specific temperature, rainfall and humidity conditions.

Crop	Temperature Range(°C)	Rainfall Range(mm)	Humidity Range (%)
Rice	20-35	100-300	60-90
Wheat	10-25	50-100	40-60
Maize	18-27	60-150	50-70
Sugarcane	20-40	100-300	70-90

You are required to build a **Weather-Based Crop Recommendation System** in Java. The system should allow a farmer to input daily weather data for a 15-day period, analyze it, and suggest the best crop to plant based on average temperature, total rainfall, and average humidity during this period. Carry out the following tasks;

1. Declare variables to store the weather data i.e temperature, humidity and rainfall
2. Declare three arrays to store temperature, humidity and rainfall measurements for 15 days
3. Accept user data for the measurements
4. Calculate the average measurements for temperature, humidity and rainfall
5. Use simple conditional logic to recommend crops based on weather trends
6. Provide clear recommendation for farmers

Sample Expected Output

Welcome to the Weather-Based Crop Recommendation System!

Enter Weather Data for 15 Days:

Analyzing the weather data .....,

Based on the weather trends:

- **Recommended Crop**: Rice
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  - Suitable for temperatures between 20-35°C, rainfall of 100-300 mm and humidity of 60-90%