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| Subject code | : | CEUC101 | Semester | : | 1 | Academic Year | : | 2024-2025 |
| Subject name | : | Computer Concepts and Programming | | | | | | |

**Instructions for Coding standards:**

* Every output must have the following printed statement in the output “24TCEXXX\_Name”.
* **Indentation:** Ensure proper indentation in code.
* **Naming Conventions:** Ensure appropriate naming conventions for variables (CamelCase is mandatory).
* **Comments:** Ensure single line or multiline comments in code.
* Habituate yourself for revising code in order to solve errors.
* Sign: and Grade: must be mentioned after every practical.

**Rubrics:**

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| **Criteria** | **Excellent 5** | **Good ¾** | **Poor 1/2** |
| Coding Standards  (Naming Conventions,  Indentation, Comments) | All 3 ensured | Any two ensured | Any one ensured |
| Output as per Expectation  (Attach output screenshot) | Attached screenshot of output and filled the table | Attached screenshot of output but not filled the table | Neither Screenshot attached nor filled the table |

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|  | **Practical** |
| **Program: 1.1** | Write and execute a C program to print your name on the screen using various text  editors (like Notepad, Word in Windows, vi, gedit in Linux) and IDEs (like  TurboC++, Code::Blocks, VS Code) in both Linux and Windows environments.  Check the additional files generated after compiling and running the C program.  Demonstrate the use of the preprocessor, compiler, and assembler in converting the  C program to executable code. |
| **Code** |  |
| **output** |  |
|  | **Practical** |
| **Program: 2** | The department of urban Planning needs to calculates the area and perimeter of the rectangular plot of land for planning purpose the dive length of the plot is 50 meters and the width is 30 meters write a program to calculate and display the area and the perimeter of the plot. |
| **Code** |  |
| **output** |  |

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|  | **Practical** |
| **Program: 3** | State Bank of India wants to calculate the simple interest on savings accounts. The  bank offers a principal amount of ₹50,000 at an annual interest rate of 5.5% for a  time period of 3 years. Write a program to calculate and display the simple interest. |
| **Code** |  |
| **output** |  |

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|  | **Practical** |
| **Program: 4** | Home Ministry of Bharat want to calculate the count illiterate men and women,  Bharat population for year 2024 is 1,441,981,744. Out of them 48.4% are women.  Total literacy rate is 85.95%. Literacy rate of male population is 80.95% and  62.84% for female population. Write a program to get desired output for Home  Ministry. |
| **Code** |  |
| **output** |  |

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|  | **Practical** |
| **Program: 5** | The Meteorological Department of India needs to convert temperature readings  from Celsius to Fahrenheit for their weather reports. Given a temperature in  Celsius, write a program to convert it to Fahrenheit using the given formula and  display the result.  Fahrenheit = (Celsius ×9/5) + 32 |
| **Code** |  |
| **output** |  |

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|  | **Practical** |
| **Program: 6** | The Finance Department needs a simple calculator program to perform basic  arithmetic operations for internal calculations. Given two fixed numbers write a  program to perform addition, subtraction, multiplication, and division based on  entered signs +, -, \*, / respectively and display the appropriate result. |
| **Code** |  |
| **output** |  |

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|  | **Practical** |
| **Program: 7** | Raman and Suman, siblings residing in different cities in Karnataka, each own multiple properties. Raman's assets include a bungalow valued at ₹12,000,000, a plot valued at ₹6,000,000, and a car valued at ₹3,000,000. Meanwhile, Suman owns an apartment valued at ₹11,000,000, a hotel valued at ₹8,000,000, and a car valued at ₹8,000,000. Determine who possesses the greater total wealth between them or whether they are equally wealthier. |
| **Code** |  |
| **output** |  |

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|  | **Practical** |
| **Program: 8** | Foodies is a restaurant established in 2020. Due to rush of customers, the waiters  are not able to manage the food supply appropriately. To help them, create a menu  ordering system, which allows customers to select the items from the menu and  compute the total cost of their order. Use switch case for menu ordering and item  selection. |
| **code** |  |
| **output** |  |

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| **Program: 9** | Determine the grade of a student based on their marks using the conditional  (ternary) operator. Take student’s marks as input and display the corresponding  grade as output according to the following criteria:   Marks >= 90: Grade A   Marks >= 80 and < 90: Grade B   Marks >= 70 and < 80: Grade C   Marks >= 60 and < 70: Grade D   Marks < 60: Grade F  Validate the input by ensuring user is entering marks between 0-100, else declare  that the entered input is invalid. |
| **Code** |  |
| **Output** |  |

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| Practicle 10 | Develop a countdown timer, that allows user to set a starting number of seconds and then count down to zero, displaying each second as it decrements. After the countdown completes write ‘Countdown completed!’. Develop a countdown timer, that allows user to set a starting number of seconds and then count down to zero, displaying each second as it decrements. After the countdown completes write ‘Countdown completed!’. |
| Code |  |
| output |  |

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| Practicle : 11 | Develop a C program that simulates a matchstick game between the user and the computer. The objective of the game is to avoid picking the last matchstick. The program should ensure that the computer always wins by strategically picking matchsticks.   * The game starts with 21 matchsticks. * The user and the computer take turns to pick 1, 2, 3, or 4 matchsticks. * The player forced to pick the last matchstick loses the game. * Rules: 1. The game starts with 21 matchsticks.   2. The user is asked to pick 1, 2, 3, or 4 matchsticks.  3. After the user picks, the computer makes its pick.  4. The player who is forced to pick the last matchstick loses the game To understand  the above game in a better way, visit the following link: http://atozmath.com/Games/21MatchStick.aspx |
| **code** |  |
| **output** |  |

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| **Practicle 12** | A company organizes events on even days of the month, from day 1 to day 100. The management wants to calculate the total budget allocated for these events. Each even day costs 200 Rs. Write a C program to compute the total budget allocated for all even-day events. |
| **code** |  |
| **output** |  |

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| Practicle : 13 |  |
| Code : |  |
| output |  |

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| **Practicle : 14** | | Use appropriate nested loops to draw the following patterns: |
| **Code :** |  |
| **Output :** |  |

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| Practicle : 14.2 | |  |
| Code : |  | |
| output |  | |

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| **Practicle 14.3** |  |
| **Code** |  |
| **output** |  |

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| **Practicle : 15** | Consider a situation where a user needs to analyze a set of numbers they input into a system. Imagine a data entry operator who inputs 25 different numbers via the keyboard. The goal is to develop a C program that processes these numbers to determine specific characteristics: how many of the numbers are positive, how many are negative, how many are even, and how many are odd |
| **Code :** |  |
| **Output :** |  |

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| **Practicle :16** | Store manager needs to sort the prices of items in inventory to prepare a report. The prices are initially listed in an unordered manner, and sorting them in ascending order will facilitate easier analysis and decision-making regarding pricing strategies and stock management. Hint: Let the user decide the number of items |
| **code** |  |
| **output** |  |

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| **Practicle 17** | Display the seating arrangement in theatre using C program. The theater has a fixed number of rows and seats per row. Create a seating chart where each seat is identified by its row and seat number. Additionally, the program should allow the user to mark certain seats as reserved. The seating chart should be displayed with indicators showing which seats are reserved and which are available. Expected Outcome: |
| **code** |  |
| **output** |  |

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| **Practicle : 18** | Let us assume, teacher is supposed to allot seats based on the student’s names. You are requested to help teacher by creating a C program, for collecting the names of 5 students and sort them in alphabetical order. |
| **code** |  |
| **output** |  |

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| **Practicle : 19** | Develop a C program to manage a simple text-based note-taking application. Users should be allowed to perform various string operations on their notes without using functions from the header file. The operations include calculating the length of a note, reversing a note, comparing two notes, copying a note, and concatenating two notes. |
| **Code :** |  |
| **Output :** |  |

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| **Practicle : 20** |  |
| **Code :** |  |
| **Output ;** |  |

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| **Practicle : 21** | Verify whether three given lengths can form a triangle. If they do, the program should then calculate the area of the triangle using Heron's formula. The program should use nested functions to accomplish this. Specifically, the program should: |
| **Code** |  |
| **output** |  |

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| Code |  |
| output |  |

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| Practicle : 23 | Imagine you are working on a program that predicts how something grows over time, like how much money you might save each month. The growth pattern follows a rule similar to the Fibonacci series, where the amount saved each month is the sum of the two previous months. To help calculate this, you need a program that can generate the Fibonacci series. Take the number of series user want to see through keyboard input. |
| Code |  |
| output |  |

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| Practicle 24 | Imagine you are working on a program that predicts how something grows over time, like how much money you might save each month. The growth pattern follows a rule similar to the Fibonacci series, where the amount saved each month is the sum of the two previous months. To help calculate this, you need a program that can generate the Fibonacci series. Take the number of series user want to see through keyboard input. |
| Code |  |
| output |  |

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| Practicle 24 | Imagine you are working on a program that predicts how something grows over time, like how much money you might save each month. The growth pattern follows a rule similar to the Fibonacci series, where the amount saved each month is the sum of the two previous months. To help calculate this, you need a program that can generate the Fibonacci series. Take the number of series user want to see through keyboard input. |
| Code |  |
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| Practicle 25 | Create a Union called library to hold accession number, title of the book, author name, price of the book and flag indicating whether the book is issued or not. (flag = 1 if the 1 By : TRUSHA PATEL, AAYUSHI CHAUDHARI book is issued, flag = 0 otherwise). Write a program to enter data of one book and display the data. |
| Code |  |
| output |  |

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| Practicle 26 | You are tasked with creating a system for managing sports teams in CHARUSAT. Each team consists of a team name, sport type (e.g., basketball, football), and a coach. Each coach has details such as name, age, and experience. Your program should: • Store information about multiple sports teams and their coaches. • Allow the user to add, search, and display team and coach information. Hint: Use a nested structure where the team structure contains another structure for coach details. 1.5 |
| Code |  |
| output | |  | | --- | |  | |

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| Practicle 27 | Imagine a situation where two values need to be swapped within a banking system, such as updating balances between two accounts after a transaction. Make use of pointer as function arguments for swapping function. |
| Code |  |
| output |  |

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| Practicle 28 |  |
| Code |  |
| output |  |

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| Practicle 29 | Write a C program using a character string in a block of memory space created by calloc () and then modify the same to store a larger string using realloc () function. (Dynamic Array). |
| Code |  |
| output |  |

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| Practicle 30 |  |
| code |  |
| output |  |

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