

UCS 2201 Fundamentals and Practice of Software Development

A2: Practicing Programming Constructs of C

Batch 2021-2024

Academic Year 2021-2022 Even

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Learning Outcome: You will be able to implement the following basic features of C

- I/O statements (*getchar/putchar, scanf/printf*)
- operators and expressions (*arithmetic / unary / conditional / relational / logical*)
- conditional constructs (*if / nested if, switch*)
- looping constructs (*for, while, do-while*)

You will be able to adapt to the following best practices

- Design before coding
- Self-documented code
- Select appropriate programming construct for conditions and iterations
- Adequate test cases to verify the correctness
- Develop code incrementally

[illegible]

Solve the following problems by implementing in C. (CO6, K3, 1.3.1, 1.4.1, 2.1.2, 2.1.3, 4.2.1, 14.2.1, 14.2.2)

- 1) Check whether the given integer is odd or even
- 2) Convert the given temperature in Celsius to Fahrenheit and Kelvin scale.
- 3) Modify (1) to set a flag to 1 if number is odd; 0 if even (Use *conditional operator*)
- 4) Find the net salary of an employee by getting the basic pay (BP) as input. Compute the net pay based upon the following formulae:
DA = 88% of BP
HRA = 8% of BP
CCA = Rs. 1000
Insurance = Rs. 2000
PF = 10% of BP
Gross Pay = BP + DA + HRA + CCA
Deductions = Insurance + PF
Net Pay = Gross Pay – Deductions
- 5) Modify (4) to set HRA based on type city which is input (Metro 10%; Corporation 8%; Taluk 5%); to set CCA based on designation (Worker (W) 1000; Engineer (E) 2000; Manager (M) 5000) (Use *switch / nested if*)
- 6) Write a C program that will ask the user for a whole number N between 3 and 10 and print an egg timer of size N. Validate N to be non-zero positive number.

Example

Enter a number ? **4**

*_*_*_*_*
 *_*_*
 _
 *
 _
 *_*_*
 *_*_*_*_*

- 7) Write a program that computes sum of N integers (Version 1)
- a. Get inputs for N, multiple times until -999 is given (Version 2) (Use *do-while*)
 - b. Get inputs for N, multiple times until 'STOP' is given (Version 3)
 - c. Validate N to be a positive number less than 100. (Version 4)
 - d. Print error message for invalid input and exit (Version 5) (Use *break*)
 - e. If input is invalid, print message and ask for another input. (Version 6)
- 8) Implement the solution for (1) without a condition?!
