Assignment

Assignment #: 5

Topic : Control Flow Statements

Level 1: Easy

1. Write a program to get employee details, wages and number of days worked from user and find total salary.
2. Write a program to check whether the given number is divisor of 7 using simple if statement.
3. Use switch case structure to print the appropriate message to recognize the entered character is vowel, consonant or symbol.
4. Write a program using do-while loop to evaluate the series **1+2+3+…..+i.**
5. Write a program using for loop to print alphabets as follows:
   az by cx dw ev fu gt hs ir jq kp lo mn nm ol pk qj ri sh tg uf ve wd xc yb za
6. Write a program that reads an integer continuously and displays "Hello" as many times as the value of the integer. If the user enters a negative number, the insertion of integers should end and the program should display the total number of the displayed "Hello".
7. Write a program using if statement to check whether the blood donor is eligible or not for donating blood. The rules laid down are as follows.
   a. Age should be above 18 yrs but less than 55 yrs.
   b. Weight should be more than 45kg.
8. Write a program to check whether the given Character is an Alphabet/ Digit /Special Symbol using if-else-if statement.
9. Write a program to print sum of digits of a given number.
10. Write a program to print the following number pattern

    Sample I/O

    Enter the N value: 5

    1
    2 2
    3 3 3
    4 4 4 4
    5 5 5 5 5

Level 2: Medium

1. Keeping in mind there are 86400 seconds per day, write a program that calculates how many seconds there are in a week if a week is 7 days.
2. Mark is purchasing certain glossary items in a supermarket. While purchasing certain items, a discount of 15% is offered to him if the quantity purchased is more than 500. Help, Mark to calculate the total expenses.
3. Write a program to calculate bill of a job work done as follows by using if-else statement.
    a. Rate of typing 3 Rs. per page
    b. Printing of 1s copy Rs. per page and later every copy 3 Rs. per page.
4. Write a program to calculate bill for Internet browsing. The conditions are:
    a. 1 hr 50 Rs.
    b. 1min 1 Re.
    c. 5 hrs 200 Rs.
    d. User can only browse maximum 7 hrs
5. Write a program that reads continuously a month number (1 = Jan, 12 = Dec), the day that the month begins (1 = Mon, 7 = Sun), and displays the calendar for that month. If the selected month is February, the program should prompt the user to enter the month's number of days, that is, 28 or 29. If the given month is out of [1, 12], the program should terminate.
6. Calculate purchase amount to be paid after discount using if-else. Consider 10 % discount for the Sale amount above 1000 and 5% discount for the Sale amount less than 1000.

    Formula:

    Purchase Amount = price * quantity

    Discount Amount = Purchase amount * 0.10(10%)

    Paid Amount = Purchase Amount – Discount Amount
7. To input basic salary of an employee and calculate gross salary based on the condition given below using if-else-if ststement:

    Basic Salary <= 10000 : HRA = 20%, DA = 80%

    Basic Salary is between 10001 to 20000: HRA = 25%, DA = 90%

    Basic Salary >= 20001 : HRA = 30%, DA = 95%

    Gross Salary=Basic Salary + HRA + DA
8. Accepts a string and calculate the number of digits and letters.

    Sample I/O:

Enter String: India became independent in 1947

Output:

Letters: 24, Digits: 4, Other Symbols: 4

9. To check whether the given number is Armstrong number or not.

   Note: Armstrong number is 3 digit number, the sum of cubes of each digit is equal to the number itself.

Level 3: Hard

1. Numbers and Alphabets has equivalent ASCII values i.e Numbers (0 to 9) equivalent ASCII value is 48 to 57, uppercase alphabet (A to Z) equivalent ASCII value is 65 to 90 and lowercase alphabet (a to z) equivalent ASCII value is 97 to 120. Write a program to sort numbers 0 to 9, alphabets in upper and lowercase using equivalent ASCII values.
2. The final grade of a student in a course is calculated as 30% of the exercise's grade and as 70% of the exam's grade, only if both grades are greater than or equal to 5; otherwise, the final grade will be their minimum. Write a program that reads continuously pairs of grades (exercises and exam grades) and displays the final grade for each student, until the user enters a pair of grades containing the value −1. Before it ends, the program should display the average grade of all students in the course. The program should check that all given grades belong in [0,10].
3. Ana planned to choose the four digit lucky number for her car. Her lucky numbers are 3, 5 and 7. Help her to find the number, whose sum is divisible by 3 or 5 or 7. Provide a valid car number, Fails to provide a valid input then display that number is not a valid car number.

   Sample Input 1:

   Enter the car no: 1234

   Sample Output 1:

   Lucky Number

   Sample Input 2:

   Enter the car no: 1214

   Sample Output 2:

   Sorry it's not my lucky number

   Sample Input 3:

   Enter the car no: 14

   Sample Output 3:

   14 is not a valid car number

4. A cloth showroom has announced the following festival discounts on the purchase of items based on the total cost of the items purchased:

Total Cost	Discount Rate
Less than Rs. 2000	5%
Rs. 2000 to less than Rs. 5000	25%
Rs. 5000 to less than Rs. 10,000	35%
Rs. 10,000 and above	50%

Write a program to input the total cost and to compute and display the amount to be paid by the customer availing the discount.

Sample Input 1:

4500

Sample Output 1:

3375.0

Sample Input 2:

6800

Sample Output 2:

4420.0

5. Sam teaches his student to find the factorial of a number. He wanted to test the understanding of the student. For that, he provides a number. He wants the students to tell him that number is a factorial of which number. Help the student by writing a program to do this.

Note that the input should be a number greater than zero. If the input is less than or equal to zero, the output should be "Invalid Input". Also, if the input provided is not exactly the factorial of a number, say, the input provided is 122, which is not a perfect factorial of a number; it should return "Sorry. The given number is not a perfect factorial".

Sample Input 1:

5040

Sample Output 1:

7

Sample Input 2:

0

Sample Output 2:

Invalid Input

Sample Input 3:

700

Sample Output 3:

Sorry. The given number is not a perfect factorial