**DAY 5 9/9/25**

**1/Write a C program to create a simple calculator using switch case. The program should take number inputs and operators (+,-,\*,/) from the user and display the result.**

**CODE:**

#include <stdio.h>

int main()

{

double num1, num2, result;

char operator;

printf("Enter first number: ");

scanf("%lf", &num1);

printf("Enter an operator (+, -, \*, /): ");

scanf(" %c", &operator);

printf("Enter second number: ");

scanf("%lf", &num2);

switch (operator)

{

case '+':

result = num1 + num2;

printf("Result: %.2lf + %.2lf = %.2lf\n", num1, num2, result);

break;

case '-':

result = num1 - num2;

printf("Result: %.2lf - %.2lf = %.2lf\n", num1, num2, result);

break;

case '\*':

result = num1 \* num2;

printf("Result: %.2lf \* %.2lf = %.2lf\n", num1, num2, result);

break;

case '/':

if (num2 != 0)

{

result = num1 / num2;

printf("Result: %.2lf / %.2lf = %.2lf\n", num1, num2, result);

}

else

{

printf("Error: Division by zero is not allowed.\n");

}

break;

default:

printf("Error: Invalid operator. Please use +, -, \*, or /.\n");

}

return 0;

}

**OUTPUT:**

Enter first number: 10

Enter an operator (+, -, \*, /): /

Enter second number: 2

Result: 10.00 / 2.00 = 5.00

Enter first number: 8

Enter an operator (+, -, \*, /): /

Enter second number: 0

Error: Division by zero is not allowed.

**2/Write a C program using switch case to check whether a given alphabet is a vowel or consonent.**

**CODE:**

#include <stdio.h>

int main()

{

char ch;

printf("Enter an alphabet: ");

scanf(" %c", &ch);

if ((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z'))

{

switch (ch)

{

case 'a':

case 'e':

case 'i':

case 'o':

case 'u':

case 'A':

case 'E':

case 'I':

case 'O':

case 'U':

printf("%c is a vowel.\n", ch);

break;

default:

printf("%c is a consonant.\n", ch);

}

}

else

{

printf("Error: '%c' is not an alphabet.\n", ch);

}

return 0;

}

**OUTPUT:**

Enter an alphabet: A

A is a vowel.

Enter an alphabet: b

b is a consonant.

Enter an alphabet: 9

Error: '9' is not an alphabet.

**3/Write a C program that calculates the total salary of an employee using switch case. Input: basic salary , calculate :**

* **HRA (House Rent Allowance) = 20% of basic**
* **TA (Travel Allowance) = 10% of basic**
* **DA (Dearness Allowance) = 5% of basic**
* **Gross Salary = Basic + HRA + TA + DA**

**CODE:**

#include <stdio.h>

int main()

{

float basicSalary, hra, ta, da, grossSalary;

int choice;

printf("Enter the basic salary of the employee: ");

scanf("%f", &basicSalary);

printf("\nChoose an option to calculate gross salary:\n");

printf("1. Calculate Gross Salary\n");

printf("Enter your choice: ");

scanf("%d", &choice);

switch (choice)

{

case 1:

hra = 0.20 \* basicSalary; // 20% of basic

ta = 0.10 \* basicSalary; // 10% of basic

da = 0.05 \* basicSalary; // 5% of basic

grossSalary = basicSalary + hra + ta + da;

printf("\n--- Salary Details ---\n");

printf("Basic Salary : %.2f\n", basicSalary);

printf("HRA (20%%) : %.2f\n", hra);

printf("TA (10%%) : %.2f\n", ta);

printf("DA (5%%) : %.2f\n", da);

printf("Gross Salary : %.2f\n", grossSalary);

break;

default:

printf("Invalid choice! Please run the program again.\n");

}

return 0;

}

**OUTPUT:**

Enter the basic salary of the employee: 50000

Choose an option to calculate gross salary:

1. Calculate Gross Salary

Enter your choice: 1

--- Salary Details ---

Basic Salary : 50000.00

HRA (20%) : 10000.00

TA (10%) : 5000.00

DA (5%) : 2500.00

Gross Salary : 67500.00

Enter the basic salary of the employee: 45000

Choose an option to calculate gross salary:

1. Calculate Gross Salary

Enter your choice: 2

Invalid choice! Please run the program again.

**4/Write a C program using switch case to calculate the electricity bill based on units consumed:**

**Rate Structure**

* **First 100 units: ₹5 per unit**
* **Next 100 units (101–200): ₹7 per unit**
* **Above 200 units: ₹10 per unit**

**CODE:**

#include <stdio.h>

int main()

{

int units;

float bill = 0.0;

int choice;

printf("Enter total units consumed: ");

scanf("%d", &units);

printf("\nChoose an option:\n");

printf("1. Calculate Electricity Bill\n");

printf("Enter your choice: ");

scanf("%d", &choice);

switch (choice)

{

case 1:

if (units <= 100)

{

bill = units \* 5;

}

else if (units <= 200)

{

bill = (100 \* 5) + ((units - 100) \* 7);

}

else

{

bill = (100 \* 5) + (100 \* 7) + ((units - 200) \* 10);

}

printf("\n--- Electricity Bill ---\n");

printf("Total Units Consumed: %d\n", units);

printf("Total Amount: Rs %.2f\n", bill);

break;

default:

printf("Invalid choice! Please run the program again.\n");

}

return 0;

}

**OUTPUT:**

Enter total units consumed: 80

Choose an option:

1. Calculate Electricity Bill

Enter your choice: 1

--- Electricity Bill ---

Total Units Consumed: 80

Total Amount: Rs 400.00

Enter total units consumed: 150

Choose an option:

1. Calculate Electricity Bill

Enter your choice: 1

--- Electricity Bill ---

Total Units Consumed: 150

Total Amount: Rs 850.00

Enter total units consumed: 250

Choose an option:

1. Calculate Electricity Bill

Enter your choice: 1

--- Electricity Bill ---

Total Units Consumed: 250

Total Amount: Rs 1700.00

**5/Write a C program using switch case to display the grade of a student based in their marks:**

| **Marks** | **Grade** |
| --- | --- |
| **95 and above** | **A+** |
| **90 – 94** | **A** |
| **80 – 89** | **B** |
| **70 – 79** | **C** |
| **Below 70** | **F** |

**CODE:**

|  |  |
| --- | --- |
| #include <stdio.h>  int main()  {  int marks;  printf("Enter the student's marks (0-100): ");  scanf("%d", &marks);  if (marks < 0 || marks > 100)  {  printf("Invalid marks! Please enter a value between 0 and 100.\n");  return 1;  }  switch (marks / 10)  {  if (marks >= 95)  printf("Grade: A+\n");  else  printf("Grade: A\n");  break;  printf("Grade: B\n");  break;  printf("Grade: C\n");  break;  default:  printf("Grade: F\n");  }  return 0;  }  **OUTPUT:**  Enter the student's marks (0-100): 97  Grade: A+  Enter the student's marks (0-100): 92  Grade: A  Enter the student's marks (0-100): 85  Grade: B  Enter the student's marks (0-100): 72  Grade: C  Enter the student's marks (0-100): 65  Grade: F  Enter the student's marks (0-100): 105  Invalid marks! Please enter a value between 0 and 100. |  |