C ASSIGNMENT

LAHARI R

2347233

- PROGRAM 1

```
#include <stdio.h>
void main()
{
   int m,n;
   printf("enter a value for m=");
   scanf("%d",&m);
   if(m>0)
   {
      printf("n=1");
   }
   else if(m==0)
   {
      printf("n=0");
   }
   else
   {
      printf("n=-1");
   }
}
```

OUTPUT:

1. enter a value for m=7
   n=1

2. enter a value for m=0
   n=0
3. enter a value for m=-8
   n=-1

- # PROGRAM 2

```
#include <stdio.h>
void main()
{
   int age;
   printf("enter the age=");
   scanf("%d",&age);
   if(age>18)
   {
      printf("candidate is eligible to vote");
   }
   else
   {
      printf("candidate is not eligible to vote");
   }
}
```

OUTPUT:

1. enter the age=7
   candidate is not eligible to vote
2. enter the age=7
   candidate is not eligible to vote

- # PROGRAM 3

```
#include <stdio.h>
   struct Student
   {
      int rollNo;
      char name[50];
      float marks[6][5];
   };
   int main()
   {
      struct Student students[3];
      int i, j;
      for (i = 0; i < 3; i++) {
         printf("Enter details for Student %d:\n", i + 1);
```

```
            printf("Roll No: ");
            scanf("%d", &students[i].rollNo);
            printf("Name: ");
            scanf("%s", students[i].name);
            for (j = 0; j < 6; j++) {
                printf("Enter Semester %d Marks for Student %d (5 subjects): ", j + 1, i + 1);
                for (int k = 0; k < 5; k++) {
                    scanf("%f", &students[i].marks[j][k]);
                }
            }
        }
        printf("\nCumulative Mark Sheet:\n");
        printf("-----------------------------------------------------------\n");
        printf("Roll No\tName\tSem 1\tSem 2\tSem 3\tSem 4\tSem 5\tSem
6\tPercentage\tResult\n");
        printf("-----------------------------------------------------------\n");
        for (i = 0; i < 3; i++) {
            float totalMarks = 0.0;

            printf("%d\t%s\t", students[i].rollNo, students[i].name);

            for (j = 0; j < 6; j++) {
                float semesterTotal = 0.0;
                for (int k = 0; k < 5; k++) {
                    semesterTotal += students[i].marks[j][k];
                }
                totalMarks += semesterTotal;
                printf("%.2f\t", semesterTotal);
            }
            float percentage = (totalMarks / 300.0) * 100;

            if (percentage <= 40) {
                printf("%.2f%%\tFail\n", percentage);
            } else if (percentage >= 60 && percentage <= 80) {
                printf("%.2f%%\tFirst Class\n", percentage);
            } else if (percentage > 80 && percentage <= 90) {
                printf("%.2f%%\tFirst Class with Distinction\n", percentage);
            } else if (percentage > 90 && percentage <= 100) {
                printf("%.2f%%\tOutstanding\n", percentage);
            }

            printf("-----------------------------------------------------------\n");
        }
        return 0;
```

}

OUTPUT:

Enter details for Student 1:

Roll No: 38

Name: ABC

Enter Semester 1 Marks for Student 1 (5 subjects): 48 85 85 93 57

Enter Semester 2 Marks for Student 1 (5 subjects): 84 95 73 85 23

Enter Semester 3 Marks for Student 1 (5 subjects): 85 75 93 75 58

Enter Semester 4 Marks for Student 1 (5 subjects): 84 75 93 75 73

Enter Semester 5 Marks for Student 1 (5 subjects): 74 82 65 73 64

Enter Semester 6 Marks for Student 1 (5 subjects): 65 53 45 96 64

Enter details for Student 2:

Roll No: 40

Name: XYZ

Enter Semester 1 Marks for Student 2 (5 subjects): 32 62 42 74 26

Enter Semester 2 Marks for Student 2 (5 subjects): 53 23 64 67 23

Enter Semester 3 Marks for Student 2 (5 subjects): 46 3 3 64 73 23

Enter Semester 4 Marks for Student 2 (5 subjects): 43 67 36 83 28

Enter Semester 5 Marks for Student 2 (5 subjects): 64 736 36 67 34

Enter Semester 6 Marks for Student 2 (5 subjects): 64 23 462 123 03

Enter details for Student 3:

Roll No: 45

Name: PQR

Enter Semester 1 Marks for Student 3 (5 subjects): 98 68 88 986 47

Enter Semester 2 Marks for Student 3 (5 subjects): 75 94 75 84 78

Enter Semester 3 Marks for Student 3 (5 subjects): 78 47 95 85 63

Enter Semester 4 Marks for Student 3 (5 subjects): 73 85 63 85 36

Enter Semester 5 Marks for Student 3 (5 subjects): 653 6 63 83 65 89

Enter Semester 6 Marks for Student 3 (5 subjects): 89 63 85 87 95

Cumulative Mark Sheet:

Roll No Name Sem 1 Sem 2 Sem 3 Sem 4 Sem 5 Sem 6 Percentage Result

---

38 ABC 368.00 360.00 413.00 400.00 358.00 323.00 ----------

40 XYZ 236.00 230.00 239.00 257.00 274.00 148.00 ----------

45 PQR 399.00 406.00 368.00 342.00 365.00 419.00 ----------

- # PROGRAM 4

```
#include <stdio.h>
void main()
 {
   int num1, num2, result;
   char operator;
   printf("Enter an operation (+, -, *, /,%): ");
   scanf("%c", &operator);
   printf("Enter two numbers: ");
   scanf("%d %d", &num1, &num2);
   switch (operator) {
      case '+':
         result = num1 + num2;
         printf("%d + %d = %d\n", num1, num2, result);
         break;
      case '-':
         result = num1 - num2;
         printf("%d - %d = %d\n", num1, num2, result);
         break;
      case '*':
         result = num1 * num2;
         printf("%d * %d = %d\n", num1, num2, result);
         break;
      case '/':
```

```
            result = num1 / num2;
            printf("%d / %d = %d\n", num1, num2, result);
         break;
      case '%':  result = num1 %num2;
            printf("%d " "%"  " %d = %d\n", num1, num2, result);
      default:
         printf("Invalid operator");
   }
}
```

OUTPUT:

1. Enter an operation (+, -, *, /,%): +
   Enter two numbers: 7
   5
   7 + 5 = 9
2. Enter an operation (+, -, *, /,%): -
   Enter two numbers: 7
   5
   7 - 5 = 2
3. Enter an operation (+, -, *, /,%): *
   Enter two numbers: 4
   5
   4*5=20
4. Enter an operation (+, -, *, /,%): /
   Enter two numbers: 4
   5
   4/5=0
5. Enter an operation (+, -, *, /,%): *
   Enter two numbers: 4
   5
   4%5=4

- # PROGRAM 5

```
#include <stdio.h>
void main()
{
   int rows, space, num = 1;
   printf("Enter the number of rows: ");
   scanf("%d", &rows);
   for (int i = 1; i <= rows; i++) {
      for (space = 1; space <= rows - i; space++)
      {
```

```
            printf("  ");
        }
        for (int j = 1; j <= i; j++)
        {
            printf("%2d  ", num);
            num += 5;
        }
        printf("\n");
    }
}
```

OUTPUT:

```
Enter the number of rows: 3
    1
  6  11
16  21  26
```

- # PROGRAM 6

```
#include <stdio.h>
float calculateTax(float basic)
{
    float tax;
    if (basic < 9000)
    {
        tax = 0.20 * basic;
    } else
    {
        tax = 0.25 * basic;
    }
    return tax;
}
void main()
{
    int n;
    float basic, savings, totalIncome, tax, deductions;
    printf("Enter the number of employees: ");
    scanf("%d", &n);
    for (int i = 1; i <= n; i++)
    {
        printf("\nEnter details for Employee %d:\n", i);
        printf("Basic Salary: ");
        scanf("%f", &basic);
```

```
            printf("Savings: ");
            scanf("%f", &savings);
            totalIncome = basic - savings;
            tax = calculateTax(totalIncome);
            deductions = (savings > 200000) ? 200000 : savings;
            printf("Tax for Employee %d: %.2f\n", i, tax);
            printf("Deductions: %.2f\n", deductions);
            float netIncome = totalIncome - tax - deductions;
            printf("Net Income: %.2f\n", netIncome);
        }
    }
```

OUTPUT:

Enter the number of employees: 3

Enter details for Employee 1:

Basic Salary: 20000

Savings: 3000

Tax for Employee 1: 4250.00

Deductions: 3000.00

Net Income: 9750.00

Enter details for Employee 2:

Basic Salary: 35000

Savings: 5000

Tax for Employee 2: 7500.00

Deductions: 5000.00

Net Income: 17500.00

Enter details for Employee 3:

Basic Salary: 80000

Savings: 13000

Tax for Employee 3: 16750.00

Deductions: 13000.00

Net Income: 37250.00

- # PROGRAM 7

```
#include <stdio.h>
struct Employee {
   int empId;
   char empName[50];
   float basicPay;
   float da;
   float hra;
   float ta;
   float lop;
   float grossSalary;
};

void calculateSalary(struct Employee *emp)
{
   emp->da = 0.4 * emp->basicPay;
   emp->hra = 0.3 * emp->basicPay;
   emp->ta = 0.1 * emp->basicPay;
   emp->grossSalary = emp->basicPay + emp->da + emp->hra + emp->ta - emp->lop;
}

void main()
{
   int n;
   printf("Enter the number of employees: ");
   scanf("%d", &n);
   struct Employee employees[n];
   for (int i = 0; i < n; i++) {
      printf("\nEnter details for Employee %d:\n", i + 1);
      employees[i].empId = i + 1;
      printf("Enter employee name: ");
      scanf("%s", employees[i].empName);
      printf("Enter basic pay: ");
      scanf("%f", &employees[i].basicPay);
      printf("Enter loss of pay (LOP): ");
      scanf("%f", &employees[i].lop);
      calculateSalary(&employees[i]);
   }
   printf("\nSalary Slip for Employees:\n");
   printf("-------------------------------------------------------\n");
   printf("Emp ID\tName\tBasic Pay\tDA\tHRA\tTA\tLOP\tGross Salary\n");
```

```
    printf("-------------------------------------------------------\n");
    for (int i = 0; i < n; i++) {
        printf("%d\t%s\t%.2f\t%.2f\t%.2f\t%.2f\t%.2f\t%.2f\n", employees[i].empId,
employees[i].empName,
            employees[i].basicPay, employees[i].da, employees[i].hra, employees[i].ta,
            employees[i].lop, employees[i].grossSalary);
    }
}
```

OUTPUT:

Enter the number of employees: 2

Enter details for Employee 1:

Enter employee name: ABC

Enter basic pay: 45000

Enter loss of pay (LOP): 4500

Enter details for Employee 2:

Enter employee name: XYZ

Enter basic pay: 80000

Enter loss of pay (LOP): 6000

Salary Slip for Employees:

Emp ID	Name	Basic Pay	DA	HRA	TA	LOP	Gross Salary
1	ABC	45000.00	18000.00	13500.00	4500.00	4500.00	76500.00
2	XYZ	80000.00	32000.00	24000.00	8000.00	6000.00	138000.00

- # PROGRAM 8

```
#include <stdio.h>
#include <math.h>
int main() {
   int first, last, temp1, temp2, remainder, i, num = 0, result = 0;
   printf("Enter First Value: ");
   scanf("%d", &first);
   printf("Enter Second Value: ");
   scanf("%d", &last);
   printf("Armstrong numbers between %d and %d are: ", first, last);
   for(i = first + 1; i < last; ++i) {
      temp2 = i;
      temp1 = i;
      while (temp1 != 0) {
         temp1 /= 10;
         ++num;
      }
      while (temp2 != 0) {
         remainder = temp2 % 10;
         result += pow(remainder, num);
         temp2 /= 10;
      }

      if (result == i) {
         printf("%d ", i);
      }

      num = 0;
      result = 0;
   }
   return 0;
}
```

OUTPUT:

```
Enter lower and upper limits: 2 9
Armstrong numbers between 2 and 9 are:
2
3
4
5
6
7
8
```

- # PROGRAM 9

```
#include <stdio.h>
int isPerfect(int num) {
   int sum = 1;
   for (int i = 2; i <= num / 2; i++) {
      if (num % i == 0) {
         sum += i;
      }
   }
   return sum == num;
}
int main() {
   printf("Perfect numbers between 10 and 100 are:\n");
   for (int i = 10; i <= 100; i++) {
      if (isPerfect(i)) {
         printf("%d\n", i);
      }
   }
   return 0;
}
```

OUTPUT:

```
Perfect numbers between 10 and 100 are:
28
```

- # PROGRAM 10

```
#include <stdio.h>
void main()
{
char aschar;
   printf("Enter an ASCII character=");
   scanf("%c", &aschar);
   int asvalue = (int)aschar;
   printf("The ASCII value of '%c' is %d", aschar, asvalue);
}
```

OUTPUT:

Enter an ASCII character=A
The ASCII value of 'A' is 65

- # PROGRAM 11

```
#include <stdio.h>
int main() {
   int result = 888 + 88 + 8 + 8 + 8;
   printf("Result: %d\n", result);
   return 0;
}
```

OUTPUT:
Result: 1000

- # PROGRAM 12

```
#include <stdio.h>
int main()
{
   int n, sum = 0;
   printf("Enter the value: ");
   scanf("%d", &n);
   for (int i = 2; i <= 2 * n; i += 2) {
      sum += i;
   }
   printf("Sum of the first %d even numbers is: %d\n", n, sum);
   return 0;
}
```

OUTPUT:
Enter the value: 6
Sum of the first 6 even numbers is: 42