pro1.c

```c
/*1.    Write a C program to read the value of an integer m and display the value of n is 1
when m is larger than 0,
0 when m is 0 and -1 when m is less than 0.*/

#include<stdio.h>
#include<conio.h>

void main() {
        int number_m, number_n;
        // clrscr();
        printf("Enter the value of m: ");
        scanf("%d", & number_m);
        if (number_m > 0) {
                number_n = 1;
        } else if (number_m == 0) {
                number_n = 0;
        } else {
                number_n = -1;
        }
        printf("The value of n is: %d\n", number_n);
        getch();
}

/*output:
                Enter the value of m: 1
                The value of n is: 1

                Enter the value of m: 0
                The value of n is: 0

                Enter the value of m: -1
                The value of n is: -1

                */
```

pro2.c

```c
1   /*2.     Write a C program to read the age of a candidate and determine whether he is
    eligible to cast his/her own vote.*/
2
3   #include<stdio.h>
4   #include<conio.h>
5    void main()
6    {
7        int age;
8        printf("Enter Your Age: ");
9        scanf("%d",&age);
10       if(age>=18)
11           {
12               printf("You are eligible to vote!!!");
13           }
14           else{
15               printf("You are not eligible to vote because you are not an adult !!!");
16           }
17           getch();
18   }
19
20   /*     Output:
21                       Enter Your Age: 18
22                       You are eligible to vote!!!
23
24                       Enter Your Age: 12
25                       You are not eligible to vote because you are not an adult !!!
26
27
28   */
```

pro3.c

```c
/*3.    Write a C program to read the roll no, name and Semester Marks for 5 Subjects(
each Semester) for 3 students  and calculate the total percentage. The conditions must be
followed
If Percentage <= 40 then and Check all the subjects marks if  marks < = 40 then Print
Result Fail
Percentage > = 60  and < = 80 then Print Result as First Class
Percentage > = 80 then < = 90  Print Result as First Class with Distinction
Percentage > = 90 - 100 then Print Result as Outstanding
Print the Cummulative Mark sheet for all 6 Semesters with each semester 5 subjects and
check eligibility to get the degree
*/


#include <stdio.h>

#define NUM_STUDENTS 3
#define NUM_SEMESTERS 6
#define NUM_SUBJECTS 5

void printResult(float percentage) {
    int percentageCategory = (int)percentage;

    switch (percentageCategory) {
        case 0 ... 40:
            printf("Result: Fail\n");
            break;
        case 41 ... 80:
            printf("Result: First Class\n");
            break;
        case 81 ... 90:
            printf("Result: First Class with Distinction\n");
            break;
        default:
            printf("Result: Outstanding\n");
            break;
    }
}

int main() {
    struct Student {
        char name[50];
        int rollNo;
        int marks[NUM_SEMESTERS][NUM_SUBJECTS];
    } students[NUM_STUDENTS];

    for (int i = 0; i < NUM_STUDENTS; i++) {
        printf("Enter details for Student %d:\n", i + 1);
        printf("Name: ");
        scanf("%s", students[i].name);
        printf("Roll No: ");
        scanf("%d", &students[i].rollNo);

        for (int j = 0; j < NUM_SEMESTERS; j++) {
            printf("Enter marks for Semester %d (5 Subjects):\n", j + 1);
            for (int k = 0; k < NUM_SUBJECTS; k++) {
                printf("Subject %d: ", k + 1);
                scanf("%d", &students[i].marks[j][k]);
```

```c
                }
                printf("\n");
            }
        }

    for (int i = 0; i < NUM_STUDENTS; i++) {
        for (int j = 0; j < NUM_SEMESTERS; j++) {
            int totalMarks = 0;
            for (int k = 0; k < NUM_SUBJECTS; k++) {
                totalMarks += students[i].marks[j][k];
            }
            float percentage = (float)totalMarks / (NUM_SUBJECTS * 100) * 100;
            printf("Student %d, Semester %d - Percentage: %.2f%%\n", i + 1, j + 1,
    percentage);
            printResult(percentage);
            printf("\n");
        }
    }

    return 0;
}

/*
            Output:
                    Enter details for Student 1:
Name: manoj
Roll No: 237
Enter marks for Semester 1 (5 Subjects):
Subject 1: 98
Subject 2: 78
Subject 3: 56
Subject 4: 98
Subject 5: 45

Enter marks for Semester 2 (5 Subjects):
Subject 1: 78
Subject 2: 98
Subject 3: 65
Subject 4: 78
Subject 5: 54

Enter marks for Semester 3 (5 Subjects):
Subject 1: 98
Subject 2: 65
Subject 3: 12
Subject 4: 45
Subject 5: 87

Enter marks for Semester 4 (5 Subjects):
Subject 1: 65
Subject 2: 98
Subject 3: 65
Subject 4: 63
Subject 5: 78

Enter marks for Semester 5 (5 Subjects):
Subject 1: 45
Subject 2: 96
Subject 3: 36
Subject 4: 36
```

```
Subject 5: 32

Enter marks for Semester 6 (5 Subjects):
Subject 1: 21
Subject 2: 54
Subject 3: 26
Subject 4: 35
Subject 5: 15

Enter details for Student 2:
Name: sujay
Roll No: 359
Enter marks for Semester 1 (5 Subjects):
Subject 1: 78
Subject 2: 98
Subject 3: 25
Subject 4: 48
Subject 5: 66

Enter marks for Semester 2 (5 Subjects):
Subject 1: 78
Subject 2: 98
Subject 3: 58
Subject 4: 49
Subject 5: 68

Enter marks for Semester 3 (5 Subjects):
Subject 1: 48
Subject 2: 54
Subject 3: 78
Subject 4: 95
Subject 5: 78

Enter marks for Semester 4 (5 Subjects):
Subject 1: 48
Subject 2: 79
Subject 3: 69
Subject 4: 15
Subject 5: 24

Enter marks for Semester 5 (5 Subjects):
Subject 1: 15
Subject 2: 78
Subject 3: 96
Subject 4: 89
Subject 5: 21

Enter marks for Semester 6 (5 Subjects):
Subject 1: 12
Subject 2: 14
Subject 3: 15
Subject 4: 21
Subject 5: 48

Enter details for Student 3:
Name: sneha
Roll No: 4216
Enter marks for Semester 1 (5 Subjects):
Subject 1: 26
Subject 2: 45
```

```
Subject 3: 48
Subject 4: 78
Subject 5: 98

Enter marks for Semester 2 (5 Subjects):
Subject 1: 16
Subject 2: 65
Subject 3: 48
Subject 4: 12
Subject 5: 21

Enter marks for Semester 3 (5 Subjects):
Subject 1: 26
Subject 2: 24
Subject 3: 45
Subject 4: 56
Subject 5: 35

Enter marks for Semester 4 (5 Subjects):
Subject 1: 48
Subject 2: 98
Subject 3: 65
Subject 4: 48
Subject 5: 21

Enter marks for Semester 5 (5 Subjects):
Subject 1: 15
Subject 2: 89
Subject 3: 78
Subject 4: 48
Subject 5: 65

Enter marks for Semester 6 (5 Subjects):
Subject 1: 35
Subject 2: 15
Subject 3: 78
Subject 4: 68
Subject 5: 59

Student 1, Semester 1 - Percentage: 75.00%
Result: First Class

Student 1, Semester 2 - Percentage: 74.60%
Result: First Class

Student 1, Semester 3 - Percentage: 61.40%
Result: First Class

Student 1, Semester 4 - Percentage: 73.80%
Result: First Class

Student 1, Semester 5 - Percentage: 49.00%
Result: First Class

Student 1, Semester 6 - Percentage: 30.20%
Result: Fail

Student 2, Semester 1 - Percentage: 63.00%
Result: First Class
```

```
Student 2, Semester 2 - Percentage: 70.20%
Result: First Class

Student 2, Semester 3 - Percentage: 70.60%
Result: First Class

Student 2, Semester 4 - Percentage: 47.00%
Result: First Class

Student 2, Semester 5 - Percentage: 59.80%
Result: First Class

Student 2, Semester 6 - Percentage: 22.00%
Result: Fail

Student 3, Semester 1 - Percentage: 59.00%
Result: First Class

Student 3, Semester 2 - Percentage: 32.40%
Result: Fail

Student 3, Semester 3 - Percentage: 37.20%
Result: Fail

Student 3, Semester 4 - Percentage: 56.00%
Result: First Class

Student 3, Semester 5 - Percentage: 59.00%
Result: First Class

Student 3, Semester 6 - Percentage: 51.00%
Result: First Class
        */
```

pro4.c

```c
/*4.    Write a program in C  to create simple Calculator using Menu Driven (Switch Case)*/

#include <stdio.h>

int main() {
    int option;
    float operand1, operand2, result;

    printf("Simple Calculator\n");
    printf("1. Addition\n");
    printf("2. Subtraction\n");
    printf("3. Multiplication\n");
    printf("4. Division\n");
    printf("5. Exit\n");

    while (1) {
        printf("\nEnter your choice (1-5): ");
        scanf("%d", &option);

        if (option == 5) {
            printf("Exit\n");
            break;
        }

        printf("Enter two numbers: ");
        scanf("%f %f", &operand1, &operand2);

        switch (option) {
            case 1:
                result = operand1 + operand2;
                printf("Addition: %.2f + %.2f = %.2f\n", operand1, operand2, result);
                break;
            case 2:
                result = operand1 - operand2;
                printf("Subtraction: %.2f - %.2f = %.2f\n", operand1, operand2, result);
                break;
            case 3:
                result = operand1 * operand2;
                printf("Multiplication: %.2f * %.2f = %.2f\n", operand1, operand2, result);
                break;
            case 4:
                if (operand2 != 0) {
                    result = operand1 / operand2;
                    printf("Division: %.2f / %.2f = %.2f\n", operand1, operand2, result);
                } else {
                    printf("Error: Cannot divide by zero.\n");
                }
                break;
            default:
                printf("Invalid choice! Please select from 1 to 5.\n");
        }
    }

    return 0;
}
```

```
/*        output:

                  Simple Calculator
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit

Enter your choice (1-5): 1
Enter two numbers: 10 20
Addition: 10.00 + 20.00 = 30.00

Enter your choice (1-5): 2
Enter two numbers: 30 40
Subtraction: 30.00 - 40.00 = -10.00

Enter your choice (1-5): 3
Enter two numbers: 5 10
Multiplication: 5.00 * 10.00 = 50.00

Enter your choice (1-5): 4
Enter two numbers: 10 5
Division: 10.00 / 5.00 = 2.00

Enter your choice (1-5): 5
Exit

*/
```

pro5.c

```c
1  /*5.    Write a program in C to make a pyramid pattern with numbers increased by multiples
   of  five */
2
3  #include <stdio.h>
4
5  int main() {
6      int rows;
7
8      printf("Enter the number of rows: ");
9      scanf("%d", &rows);
10
11     int count = 1;
12     for (int i = 1; i <= rows; i++) {
13         for (int j = 1; j <= rows - i; j++) {
14             printf("   ");
15         }
16
17         for (int k = 1; k <= i; k++) {
18             printf("%-4d", count * 5);
19             count++;
20         }
21
22         printf("\n");
23     }
24
25     return 0;
26  }
27
28  /*
29          output:
30              Enter the number of rows: 3
31        5
32     10  15
33  20  25  30
34  */
```

pro6.c

```c
1  /*6. C program to calculate the tax of n given number of employees.
2   Use a separate function to calculate the tax. Tax is 20% of basic if basic is less than
   9000 otherwise tax is 25% of basic.
3   Add Deductions of Savings around 2,00,000
4  */
5
6  #include <stdio.h>
7
8  // Function to calculate tax with savings deduction
9  float calculateTax(float basic, float savings) {
10     float taxRate = (basic < 9000) ? 0.20 : 0.25;
11     float taxableIncome = basic - savings;
12     float tax = taxableIncome * taxRate;
13     return tax;
14 }
15
16 int main() {
17     int numEmployees;
18     float basicSalary, savings, tax, totalTax = 0.0;
19
20     printf("Enter the number of employees: ");
21     scanf("%d", &numEmployees);
22
23     for (int i = 1; i <= numEmployees; i++) {
24         printf("Enter the basic salary for Employee %d: ", i);
25         scanf("%f", &basicSalary);
26
27         printf("Enter the savings for Employee %d: ", i);
28         scanf("%f", &savings);
29
30         tax = calculateTax(basicSalary, savings);
31         totalTax += tax;
32
33         printf("Tax for Employee %d: %.2f\n", i, tax);
34     }
35
36     printf("Total Tax for all employees: %.2f\n", totalTax);
37
38     return 0;
39 }
40
41
42 /*output:
43
44 Enter the number of employees: 3
45 Enter the basic salary for Employee 1: 8000
46 Enter the savings for Employee 1: 1000
47 Enter the basic salary for Employee 2: 10000
48 Enter the savings for Employee 2: 2000
49 Enter the basic salary for Employee 3: 12000
50 Enter the savings for Employee 3: 3000
51
52 Tax for Employee 1: 1400.00
53 Tax for Employee 2: 2000.00
54 Tax for Employee 3: 2250.00
55 Total Tax for all employees: 5650.00
```

```
56    */
```

pro7.c

```c
/*7. C program to calculate the salary Slip of a given number of employees.(DA, Basic Pay,
HRA, TA, LOP) */


#include <stdio.h>

// Function to calculate salary slip
void calculateSalarySlip(float basic, float daRate, float hraRate, float taRate, float
lopDays) {
    float da, hra, ta, grossSalary, deductions, netSalary;

    // Calculate allowances
    da = (daRate / 100) * basic;
    hra = (hraRate / 100) * basic;
    ta = (taRate / 100) * basic;

    // Calculate gross salary
    grossSalary = basic + da + hra + ta;

    // Calculate deductions
    deductions = (lopDays / 30) * basic;

    // Calculate net salary
    netSalary = grossSalary - deductions;

    // Print salary slip
    printf("\nSalary Slip:\n");
    printf("Basic Salary: %.2f\n", basic);
    printf("Dearness Allowance (DA): %.2f\n", da);
    printf("House Rent Allowance (HRA): %.2f\n", hra);
    printf("Travel Allowance (TA): %.2f\n", ta);
    printf("Loss of Pay (LOP): %.2f\n", deductions);
    printf("Gross Salary: %.2f\n", grossSalary);
    printf("Net Salary: %.2f\n", netSalary);
}

int main() {
    int numEmployees;
    float empBasic, empDaRate, empHraRate, empTaRate, empLopDays;
    int i = 1;

    printf("Enter the number of employees: ");
    scanf("%d", &numEmployees);

    while (i <= numEmployees) {
        printf("\nEnter details for Employee %d:\n", i);
        printf("Basic Salary: ");
        scanf("%f", &empBasic);
        printf("Dearness Allowance (DA) Rate: ");
        scanf("%f", &empDaRate);
        printf("House Rent Allowance (HRA) Rate: ");
        scanf("%f", &empHraRate);
        printf("Travel Allowance (TA) Rate: ");
        scanf("%f", &empTaRate);
        printf("Loss of Pay (LOP) Days: ");
        scanf("%f", &empLopDays);
```

```
55
56            calculateSalarySlip(empBasic, empDaRate, empHraRate, empTaRate, empLopDays);
57
58            i++;
59        }
60
61        return 0;
62    }
63
64
65    /*
66            Output:
67
68    Enter the number of employees: 2
69
70    Enter details for Employee 1:
71    Basic Salary: 8000
72    Dearness Allowance (DA) Rate: 10
73    House Rent Allowance (HRA) Rate: 20
74    Travel Allowance (TA) Rate: 10
75    Loss of Pay (LOP) Days: 30
76
77    Salary Slip:
78    Basic Salary: 8000.00
79    Dearness Allowance (DA): 800.00
80    House Rent Allowance (HRA): 1600.00
81    Travel Allowance (TA): 800.00
82    Loss of Pay (LOP): 8000.00
83    Gross Salary: 11200.00
84    Net Salary: 3200.00
85
86    Enter details for Employee 2:
87    Basic Salary: 10000
88    Dearness Allowance (DA) Rate: 10
89    House Rent Allowance (HRA) Rate: 30
90    Travel Allowance (TA) Rate: 20
91    Loss of Pay (LOP) Days: 20
92
93    Salary Slip:
94    Basic Salary: 10000.00
95    Dearness Allowance (DA): 1000.00
96    House Rent Allowance (HRA): 3000.00
97    Travel Allowance (TA): 2000.00
98    Loss of Pay (LOP): 6666.67
99    Gross Salary: 16000.00
100   Net Salary: 9333.33
101   */
```

pro8.c

```c
/*8. Write a C program to print all the Armstrong numbers between two intervals.*/

#include <stdio.h>

// Function to calculate the number of digits in a number
int countDigits(int num) {
    int count = 0;
    while (num != 0) {
        num /= 10;
        count++;
    }
    return count;
}

// Function to check if a number is an Armstrong number
int isArmstrong(int num) {
    int originalNum = num;
    int numDigits = countDigits(num);
    int sum = 0;

    while (num != 0) {
        int digit = num % 10;
        sum += digit * digit * digit;
        num /= 10;
    }

    return originalNum == sum;
}

int main() {
    int startInterval, endInterval;

    printf("Enter the start and end numbers: ");
    scanf("%d %d", &startInterval, &endInterval);

    printf("Armstrong numbers between %d and %d are:\n", startInterval, endInterval);
    for (int num = startInterval; num <= endInterval; num++) {
        if (isArmstrong(num)) {
            printf("%d\n", num);
        }
    }

    return 0;
}

/*
    Output:

Enter the start and end numbers: 100 1000
Armstrong numbers between 100 and 1000 are:
153
370
371
407
*/
```

```
/*
        Output:

*/
```

pro9.c

```c
/*9. Write a C program to find the 'Perfect' numbers within a 10 to 100*/

#include <stdio.h>

// Function to check if a number is a perfect number
int isPerfect(int num) {
    int sum = 0;
    for (int divisor = 1; divisor < num; divisor++) {
        if (num % divisor == 0) {
            sum += divisor;
        }
    }
    return sum == num;
}

int main() {
    printf("Perfect numbers between 10 and 100 are:\n");
    for (int number = 10; number <= 100; number++) {
        if (isPerfect(number)) {
            printf("%d\n", number);
        }
    }

    return 0;
}

/*
        output:
        Perfect numbers between 10 and 100 are:
        28
*/
```

pro10.c

```c
/*10 Write a C program to convert given ASCII Charcter into  number .*/
#include <stdio.h>

int main() {
    char Char;

    printf("Enter an character: ");
    scanf("%c", &Char);
    int ascii = Char; // ASCII value is automatically converted to integer
    printf("The ASCII value of '%c' is %d\n", Char, ascii);

    return 0;
}

/*
            output:
Enter an character: A
The ASCII value of 'A' is 65
*/
```

pro11.c

```c
/*11. Write a C Program to use only an addition, how do you add eight 8's and get the
number 1000?*/

#include <stdio.h>

int main() {
    int result;
    result = 888 + 88 + 8 + 8 + 8;
    printf("Result: %d\n", result);
    return 0;
}

/*
    Output:
    Result: 1000
*/
```

pro12.c

```c
/*12 Write a C Program to use only For loop to solve addition of n even numbers*/
#include <stdio.h>

int main() {
    int numTerms, totalSum = 0;

    printf("Enter the number of terms (n): ");
    scanf("%d", &numTerms);

    for (int i = 1; i <= numTerms; i++) {
        int evenNum = 2 * i;
        totalSum += evenNum;
    }

    printf("Sum of first %d even numbers is: %d\n", numTerms, totalSum);

    return 0;
}
/*
    Output:Enter the number of terms (n): 10
Sum of first 10 even numbers is: 110
*/
```