Q.1. Write a C program to print following series up to the n (Value of n will be given by user):
1 2 4 7 11 16 …… n

main.c

Save Run

```c
#include <stdio.h>

int main()
{
    int n, i, term = 1, nextTerm = 1;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    printf("Series: ");
    for (i = 1; i <= n; i++)
    {
        printf("%d ", term);
        nextTerm = term + i;
        term = nextTerm;
    }

    return 0;
}
```

Output

```
/tmp/NQJM5nXSjj.o
Enter the value of n: 8
Series: 1 2 4 7 11 16 22 29
```

Q.2. Write a C program to calculate the average of n given number.

main.c

Save Run

```c
#include <stdio.h>

int main()
{
    int n, i, sum = 0;
    float average;

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

    printf("Enter %d values:\n", n);
    for (i = 0; i < n; i++)
    {
        int num;
        scanf("%d", &num);
        sum += num;
    }

    average = (float)sum / n;
    printf("The average is: %.2f\n", average);

    return 0;
}
```

Output

```
/tmp/OEWYgJ5Lup.o
Enter the number of values: 5
Enter 5 values:
43
545
643
66
21
The average is: 263.60
```

Q,3. Write a program that acts as a simple calculator. Prompt the user to enter two numbers and an operator (+, -, *, /) (Using switch).

main.c

Save Run

```c
#include <stdio.h>

int main() {
    double num1, num2, result;
    char operator;

    printf("Enter the first number: ");
    scanf("%lf", &num1);

    printf("Enter the second number: ");
    scanf("%lf", &num2);

    printf("Enter the operator (+, -, *, /): ");
    scanf(" %c", &operator);

    switch (operator) {
        case '+':
            result = num1 + num2;
            printf("Result: %.2lf\n", result);
            break;
        case '-':
            result = num1 - num2;
            printf("Result: %.2lf\n", result);
            break;
        case '*':
            result = num1 * num2;
            printf("Result: %.2lf\n", result);
            break;
        case '/':
            if (num2 != 0) {
                result = num1 / num2;
                printf("Result: %.2lf\n", result);
            } else {
                printf("Error: Division by zero is not allowed.\n");
            }
            break;
        default:
            printf("Error: Invalid operator.\n");
            break;
    }

    return 0;
}
```

Output

```
/tmp/TQsvduQRQy.o
Enter the first number: 29
Enter the second number: 5
Enter the operator (+, -, *, /): /
Result: 5.80

/tmp/5WZ3eq7jKk.o
Enter the first number: 421
Enter the second number: 40
Enter the operator (+, -, *, /): #
ERROR!
Error: Invalid operator.


/tmp/1GOgrUQmIW.o
Enter the first number: 53
Enter the second number: 0
Enter the operator (+, -, *, /): /
ERROR!
Error: Division by zero is not allowed.
```

Q.4. Write a program that displays a menu with different options (e.g.,1. Add, 2. Subtract, 3. Multiply, 4. Divide). Prompt the user to select an option, and execute the corresponding operation based on the users choice repeat the process until user enter 0 to stop the program.

main.c

Save Run

```c
#include <stdio.h>

int main()
{
    int choice;
    float num1, num2;
    while (1)
    {
        printf("1. Add\n2. Subtract\n3. Multiply\n4. Divide\n0. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);
        switch (choice)
        {
        case 1:
            printf("Enter two numbers: ");
            scanf("%f %f", &num1, &num2);
            printf("Result: %.2f\n", num1 + num2);
            break;
        case 2:
            printf("Enter two numbers: ");
            scanf("%f %f", &num1, &num2);
            printf("Result: %.2f\n", num1 - num2);
            break;
        case 3:
            printf("Enter two numbers: ");
            scanf("%f %f", &num1, &num2);
            printf("Result: %.2f\n", num1 * num2);
            break;
        case 4:
            printf("Enter two numbers: ");
            scanf("%f %f", &num1, &num2);
            if (num2 == 0)
            {
                printf("Cannot divide by zero.\n");
            }
            else
            {
                printf("Result: %.2f\n", num1 / num2);
            }
            break;
        case 0:
            printf("Exiting program.\n");
            return 0;
        default:
            printf("Invalid choice. Please enter a number between 0 and 4.\n");
            break;
        }
    }
    return 0;
}
```

Output

```
/tmp/sBQmC9O6Xk.o
1. Add
2. Subtract
3. Multiply
4. Divide
0. Exit
Enter your choice: 6
Invalid choice. Please enter a number between 0 and 4.
1. Add
2. Subtract
3. Multiply
4. Divide
0. Exit
Enter your choice: 2
Enter two numbers: 2
78
Result: -76.00
1. Add
2. Subtract
3. Multiply
4. Divide
0. Exit
Enter your choice: 4
Enter two numbers: 2
0
Cannot divide by zero.
1. Add
2. Subtract
3. Multiply
4. Divide
0. Exit
Enter your choice: 0
Exiting program.
```

Q.5. Write a C program to determine eligibility for admission to a professional course based on the following criteria: Marks in Maths >=65 and Marks in Phy >=55 and Marks in Chem >=50 and Total in all three subject >=190 or Total in Math and Physics >=140 Display whether the candidate is eligible or not? If candidate is not eligible than give the reason for that as well; Eg. Candidate is not eligible as marks in physics are less than 55.

main.c

Save Run

```c
#include <stdio.h>
int main()
{
    int math, phy, chem;
    printf("Enter marks in Maths: ");
    scanf("%d", &math);
    printf("Enter marks in Physics: ");
    scanf("%d", &phy);
    printf("Enter marks in Chemistry: ");
    scanf("%d", &chem);
    if (math >= 65 && phy >= 55 && chem >= 50 && (math + phy + chem) >= 190)
    {
        printf("Eligible");
    }
    else if ((math + phy) >= 140)
    {
        printf("Eligible");
    }
    else
    {
        if (math < 65)
        {
            printf("Not eligible as marks in Maths are less than 65");
        }
        else if (phy < 55)
        {
            printf("Not eligible as marks in Physics are less than 55");
        }
        else if (chem < 50)
        {
            printf("Not eligible as marks in Chemistry are less than 50");
        }
        else if ((math + phy + chem) < 190)
        {
            printf("Not eligible as total marks are less than 190");
        }
    }
    return 0;
}
```

Output

```
/tmp/E6mEEwRNra.o
Enter marks in Maths: 56
Enter marks in Physics: 22
Enter marks in Chemistry: 86
Not eligible as marks in Maths are less than 65
```

```
/tmp/cULZBnV500.o
Enter marks in Maths: 34
Enter marks in Physics: 98
Enter marks in Chemistry: 22
Not eligible as marks in Maths are less than 65
```

```
/tmp/C8vYfMxazp.o
Enter marks in Maths: 98
Enter marks in Physics: 43
Enter marks in Chemistry: 55
Eligible
```

```
/tmp/sARK9owTxb.o
Enter marks in Maths: 87
Enter marks in Physics: 90
Enter marks in Chemistry: 45
Eligible
```

Q. 6. Write a C program to compute the factorial of any given number.

main.c

Save Run

```c
#include <stdio.h>
int main()
{
    int n, i, fact = 1;
    printf("Enter a number: ");
    scanf("%d", &n);

    for (i = 1; i <= n; i++)
    {
        fact = fact * i;
    }

    printf("Factorial of %d is: %d", n, fact);

    return 0;
}
```

Output

```
/tmp/VTHgnyqoT0.o
Enter a number: 6
Factorial of 6 is: 720

/tmp/JuJk8dpAzp.o
Enter a number: 0
Factorial of 0 is: 1

/tmp/s8UKJEXJYH.o
Enter a number: 1
Factorial of 1 is: 1
```

Q. 7. Write a C program to check whether number is prime or not prime.

main.c

Save Run

```c
#include <stdio.h>

int main() {

  int n, i, prime = 1;
  printf("Enter a positive integer: ");
  scanf("%d", &n);

  // 0 and 1 are not prime numbers
  if (n == 0 || n == 1) prime = 0;

  for (i = 2; i <= n / 2; ++i) {
    if (n % i == 0) {
      prime = 0;
      break;
    }
  }

  if (prime == 1)
    printf("%d is a prime number.", n);
  else
    printf("%d is not a prime number.", n);

  return 0;
}
```

Output

```
/tmp/QzQgMGheYZ.o
Enter a positive integer: 13
13 is a prime number.
```

```
/tmp/O3OMS7Q3S6.o
Enter a positive integer: 0
0 is not a prime number.
```

```
/tmp/RMRolpXj8H.o
Enter a positive integer: 98
98 is not a prime number.
```