1. Write a program to read n numbers from the keyboard and find their sum.

```
#include<stdio.h>
void main() {
   int n, num, sum = 0;
   printf("Enter the number of elements: ");
   scanf("%d”,&n);
   for(int i = 0; i < n; i++) {
      printf("Enter a number: ");
      scanf("%d", &num);
      sum += num;
   }
   printf("Sum = %d\n", sum);
}
```

Out put: Enter the number of elements: 2

Enter a number: 30 20

Sum=50

2. Write a program to read a number n, and print sum of all the numbers from 1 to n.

```
#include <stdio.h>
void main() {
   int n, sum = 0;
   printf("Enter a number: ");
```

```
    scanf("%d", &n);
    for (int i = 1; i <= n; i++) {
        sum += i;
    }
    printf("Sum of numbers from 1 to %d is: %d\n", n, sum);
}
```

Enter a number: 4

Sum of numbers from 1 to 4 is: 10

3. Write a program to read a number n and print the factorial of n.

Example:
Enter n number: 4
Factorial of 4 is 24

```
#include <stdio.h>
Void main() {
    int n;
    long long factorial = 1;
    printf("Enter the n value: ");
    scanf("%d", &n);
    for (int i = 1; i <= n; i++) {
        factorial *= i;
    }
    printf("Factorial of %d is: %lld\n", n, factorial);
}
```

Out put: enter the n value:4

Factorial of 4 is 24

4. Write a program to print the value of below series:

Generic formula: 1 - 1/2 + 1/3 - 1/4 .... + 1/n etc

```
#include <stdio.h>


int main() {
   int n;
   double sum = 0.0;
   printf("Enter the value of n: ");
   scanf("%d", &n);
   for (int i = 1; i <= n; i++) {
      if (i % 2 == 1) {
         sum += 1.0 / i;
      } else {
         sum -= 1.0 / i;
      }
   }
   printf("The value of the series is: %lf\n", sum);
   return 0;
}
```

Out put: Enter the value of n: 3

The value of the series is: 0.833333

5. Write a program to multiply two numbers without using * operator,

```
#include <stdio.h>
void main() {
    int num1, num2, result = 0;
    printf("Enter two numbers: ");
    scanf("%d %d", &num1, &num2);
    for (int i = 0; i < num2; i++) {
        result += num1;
    }
    printf("The product of %d and %d is: %d\n", num1, num2, result);
}
```

Out put: Enter two numbers: 2

3

The product of 2 and 3 is: 6

6. Write a program to find the power of a number to the given number.

```
#include <stdio.h>

void main() {
    int base, exponent, result = 1, i = 1;
    printf("Enter base: ");
```

```
    scanf("%d", &base);
    printf("Enter exponent: ");
    scanf("%d", &exponent);
    while (i <= exponent) {
        result *= base;
        i++;
    }
    printf("%d to the power of %d is %d\n", base, exponent, result);
}
```

Out put: Enter base: 3

Enter exponent: 2

3 to the power of 2 is 9

1. Read n number of numbers from user (n value taken as input) and print if each number is even or odd.

```
#include <stdio.h>
void main()
{
    int n,num;
    printf("enter the number of values:");
    scanf("%d",&n);
    for(int i=0;i<n;i++){
        printf("enter number %d:",i+1);
```

```
        scanf("%d",&num);
        if(num%2==0){
            printf("the give number is even\n");
        }
        else{
            printf("the given number is odd\n");
        }
    }
}
```

Out put: enter the number of values:1

Enter number: 2

Given number is even

2) Read n characters from user, and print if each character is vowel or not.

```
#include <stdio.h>
void main() {
    int n;
    char ch;
    printf("Enter the number of characters: ");
    scanf("%d", &n);
    for (int i = 0; i < n; i++) {
        printf("Enter character %d: ", i + 1);
        scanf(" %c", &ch);
```

```
        if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
            ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U') {
            printf("%c is a vowel\n", ch);
        } else {
            printf("%c is not a vowel\n", ch);
        }
    }
}
```

Out put: enter the number of character:1

Enter a character: A

A is a vowel

3. Read n characters from user and print if each character is a capital alphabet, small alphabet, numeric character or special character.

```
#include<stdio.h>
#include<ctype.h>
void main(){
    int n;
    char ch;
    printf("enter the number of characters:");
    scanf("%d",&n);
    printf("enter %d characters:\n",n);
    for(int i=0;i<n;i++){
```

```
        scanf("%c",&ch);
        if(isupper(ch)){
           printf("%c is a capital alphabet\n",ch);
        }else if(islower(ch)){
            printf("%c is a smal alphabet\n",ch);
        }else if(isdigit(ch)){
            printf("%c is a numeric character\n",ch);
        }else {
            printf("%c is a special character\n",ch);
        }
    }
}
```

Output: Enter n characters: 3
Enter a character: b
The given character 'b' is a small alphabet.
Enter a character: ?
The given character '? ' is a special character.
Enter a character: B
The Giiven character 'B ' is a Capital alphabet.

4. Read n numbers from the user, and while reading every number, print if the number is bigger or smaller than the previous number. For the first number, there won't be any output as it is the first one.

```
#include <stdio.h>
void main() {
   int n, current, previous;
   printf("Enter the number of elements: ");
   scanf("%d", &n);
```

```
    if (n <= 0) {
        printf("Please enter a valid positive number.\n");
        return 1;
    }

    printf("Enter %d numbers:\n", n);
    scanf("%d", &previous);
    for (int i = 1; i < n; i++) {
        scanf("%d", &current);

        if (current > previous) {
            printf("%d is bigger than %d\n", current, previous);
        } else if (current < previous) {
            printf("%d is smaller than %d\n", current, previous);
        } else {
            printf("%d is equal to %d\n", current, previous);
        }

        previous = current;
    }
}
```

Output:

```
Enter the number of elements: 3
Enter 3 numbers:
4
5
5 is bigger than 4
6
6 is bigger than 5
```

5) Read n numbers in ascending order. If a number entered is bigger than the previous number, then count it. If it is smaller, then don't count it, instead let the loop repeat itself and read another number.

```
#include <stdio.h>
void main() {
    int n, current, previous, count = 1;
```

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

    if (n <= 0) {
        printf("Please enter a valid positive number.\n");
    }
    printf("Enter numbers in ascending order:\n");
    scanf("%d", &previous);
    for (int i = 1; i < n; ) {
        scanf("%d", &current);
        if (current > previous) {
            count++;
            previous = current;
            i++;
        } else {
            printf("%d is not greater than %d, enter again.\n", current, previous);
        }
    }

    printf("Valid numbers counted: %d\n", count);
}
```

output:Enter the number of elements: 4
Enter numbers in ascending order:

1
2
3
5
Valid numbers counted: 4

6. Read n numbers from the user ,and print the smallest number of all.

```
#include <stdio.h>
void main() {
    int n, num, min;
```

```
    printf("Enter the number of elements: ");
    scanf("%d", &n);
    printf("Enter %d numbers:\n", n);
    scanf("%d", &min);
    for (int i = 1; i < n; i++) {
        scanf("%d", &num);
        if (num < min) {
            min = num;
        }
    }
    printf("The smallest number is: %d\n", min);
}
```

output:Enter the number of elements: 4
Enter 4 numbers:
2
4
1
5
The smallest number is: 1

7) Read a number from the user, and print its multiplication table upto 10 multiples.

```
#include <stdio.h>
void main() {
    int n, num;
    printf("Enter n number: ");
    scanf("%d", &n);
    for (int i = 0; i < n; i++) {
        printf("Enter x number: ");
        scanf("%d", &num);

        for (int j = 1; j <= 10; j++) {
            printf("%d * %d = %d\n", num, j, num * j);
        }
    }
}
```

output:Enter n number: 2

```
Enter x number: 3
3 * 1 = 3
3 * 2 = 6
3 * 3 = 9
3 * 4 = 12
3 * 5 = 15
3 * 6 = 18
3 * 7 = 21
3 * 8 = 24
3 * 9 = 27
3 * 10 = 30
Enter x number: 4
4 * 1 = 4
4 * 2 = 8
4 * 3 = 12
4 * 4 = 16
4 * 5 = 20
4 * 6 = 24
4 * 7 = 28
4 * 8 = 32
4 * 9 = 36
4 * 10 = 40
```

8. For n students from a class, read 6 subject marks for every student, and calculate their percentage of marks, and print who is the topper of all (print the student number).

```
#include <stdio.h>
void main() {
   int n, studentID, topperID = 1;
   float marks, total, percentage=0;
   printf("Enter number of students: ");
   scanf("%d", &n);
   for (int i = 1; i <= n; i++) {
      total = 0;
      printf("Enter %d student 6 subjects marks:\n", i);
      for (int j = 0; j < 6; j++) {
```

```
        scanf("%f", &marks);
        total += marks;
      }
      percentage = (total / 600) * 100;
      printf("Student %d percentage is: %.2f%%\n", i, percentage);
   }
}                                                    output: Enter number of students:
2
Enter 1 student 6 subjects marks:
56
78
76
87
56
67
Student 1 percentage is: 70.00%
Enter 2 student 6 subjects marks:
54
65
78
98
56
45
Student 2 percentage is: 66.00%
```

9. Read two numbers from the user, and print all serial numbers between those numbers.

```
#include <stdio.h>
void main() {
   int start, end;
   printf("Enter the starting number: ");
   scanf("%d", &start);
   printf("Enter the ending number: ");
   scanf("%d", &end);
   if (start > end) {
      printf("Starting number should be less than or equal to ending number.\n");
```

```
    } else {
        printf("Serial numbers: ");
        for (int num = start; num <= end; num++) {
            printf("%d ", num);
        }
        printf("\n");
    }
}
```

out put:Enter the starting number: 10
Enter the ending number: 20
Serial numbers: 10 11 12 13 14 15 16 17 18 19 20

10. write the calculator program to read two numbers and one character (+, -, *, / , %) from the user, and based on character, do appropriate operations on numbers and print the output. Modify the program to repeat this task n number of times.

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

```
            printf("%d %% %d = %d\n", num1, num2, num1 % num2);
            break;
        default:
            printf("Invalid operator.\n");
    }
}
```
output: Enter two numbers: 2
3
Enter an operator (+, -, *, /, %): %
2 % 3 = 2

11. Read two numbers from the user, and print all odd numbers between those numbers and then all even numbers.

```
#include <stdio.h>
void main() {
    int start, end;
    printf("Enter two numbers: ");
    scanf("%d %d", &start, &end);
    printf("Even numbers: ");
    for (int i = start; i <= end; i++) {
        if (i % 2 == 0) {
            printf("%d ", i);
        }
    }
    printf("\nOdd numbers: ");
    for (int i = start; i <= end; i++) {
        if (i % 2 != 0) {
            printf("%d ", i);
        }
    }
    printf("\n");
}
```
Enter two numbers: 2
10
Even numbers: 2 4 6 8 10
Odd numbers: 3 5 7 9

12. Read two numbers from the user, and print all numbers in reverse order.

```
#include <stdio.h>
void main() {
   int start, end;
   printf("Enter two numbers (start and end): ");
   scanf("%d %d", &start, &end);
   if (start < end) {
      for (int i = end; i >= start; i--) {
         printf("%d ", i);
      }
   } else {
      for (int i = start; i >= end; i--) {
         printf("%d ", i);
      }
   }
   printf("\n");
}
```

output: Enter two numbers (start and end): 2
10
10 9 8 7 6 5 4 3 2