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Enrolment Number: 23SS02IT157 (SCA23293)
Subject Name: Data Structure
Subject Code: SSCS1021

Assignment 1

DATE: 19/12/2023

Program:1

Aim: write a c program to print"Hello World!" to the console.

Program:

```
#include <stdio.h>


int main() {


   printf("Hello world");


   return 0;
}
```

Output:

```
/tmp/z2gB7BNYgG.o
Hello world
```

Program:2

Aim:Write a program that takes two numbers as input and prints their sum.

Program:

```
#include<stdio.h>
int main()
{
   int a,b,sum;
```

```
    printf("Enter first number:");
    scanf("%d", &a);
    printf("Enter second number:");
    scanf("%d", &b);

    sum=a+b;
    printf("Anwer is:%d",sum);
    return 0;
}
```

Output:

```
/tmp/z2gB7BNYgG.o
Enter first number:12
Enter second number:5
Anwer is:17
```

Program:3

Aim:Write a c program to calculate the factorial of given positive integer.

Program:

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

```
 }
  printf("Factorial of %d is: %d",number,fact);
return 0;
}
```

Output:

```
/tmp/z2gB7BNYgG.o
Enter a number: 5
Factorial of 5 is: 120
```

Program:4

Aim:create a program that checks if a given number is even or odd.

Program:

```
#include <stdio.h>
int main() {
   int num;
   printf("Enter an integer: ");
   scanf("%d", &num);

   if(num % 2 == 0)
      printf("%d is even.", num);
   else
      printf("%d is odd.", num);

   return 0;
}
```

Output:

Even number output:

```
/tmp/z2gB7BNYgG.o
Enter an integer: 14
14 is even.
```

Odd number output:

```
/tmp/z2gB7BNYgG.o
Enter an integer: 5
5 is odd.
```

Program:5

Aim:Write a program to swap the value of two variable without using a third variable.

Program:

```
#include<stdio.h>
 int main()
{
int a=10, b=20;
printf("Before swap a=%d b=%d",a,b);
a=a+b;//a=30 (10+20)
b=a-b; //b=10 (30-20)
a=a-b; //a=20 (30-10)
printf("\nAfter swap a=%d b=%d",a,b);
return 0;
}
```

Output:

```
/tmp/z2gB7BNYgG.o
Before swap a=10 b=20
After swap a=20 b=10
```

Program:6

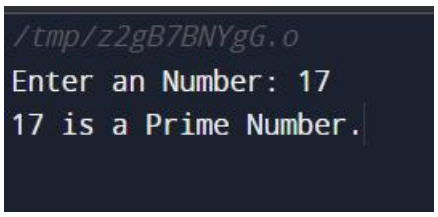
Aim:Develop a program to determine if a given number is prime or not.

Program:

```
#include <stdio.h>
int main(){
   int num, i, c = 0;



   printf("Enter a Number: ");
   scanf("%d", &num);



   for (i = 1; i <= num; i++){
      if (num % i == 0){
         c++;
      }
   }
   if (c == 2){
      printf("%d is a Prime Number.", num);
   }
   else {
```

```
        printf("%d is not a Prime Number.", num);
    }
    return 0;
}
```

Output:



Program:7

Aim:write a c program to generate the fibonacci series up to a specified term.

Program:

```
#include<stdio.h>
int main()
{
 int n1=0,n2=1,n3,i,number;
 printf("Enter the number of elements:");
 scanf("%d",&number);
 printf("\n%d %d",n1,n2);
 for(i=2;i<number;++i)
 {
  n3=n1+n2;
  printf(" %d",n3);
  n1=n2;
  n2=n3;
```

```
}
 return 0;
}
```

Output:

```
/tmp/z2gB7BNYgG.o
Enter the number of elements:10
0 1 1 2 3 5 8 13 21 34
```

Program:8

Aim:Implement a program that perfoms basic operations on an array, such as finding the sum, average,and maximum element.

Program:

```
#include <stdio.h>


int main() {


   int arr[] = {1, 2, 3, 4, 5};
   int n = sizeof(arr) / sizeof(arr[0]);



   int sum = 0;
   for (int i = 0; i < n; i++) {
      sum += arr[i];
   }
   printf("Sum: %d\n", sum);
   float average = (float)sum / n;
   printf("Average: %.2f\n", average);
```

```
    int max = arr[0];
    for (int i = 1; i < n; i++) {
        if (arr[i] > max) {
            max = arr[i];
        }
    }
    printf("Maximum: %d\n", max);

    return 0;
}
```

Output:

```
/tmp/z2gB7BNYgG.o
Sum: 15
Average: 3.00
Maximum: 5
```

Program:9

Aim:create aprogram to check if a given string is a palindrome or not

Program:

```
#include <stdio.h>
#include <string.h>


int main()
{
    char str[10] = "naman";
```

```
    int i, len, flag = 0;

    len = strlen(str);

    for (i = 0; i < len; i++)
    {
        // Checking if string is palindrome or not
        if (str[i] != str[len - i - 1]) {
            flag = 1;
            break;
        }
    }

    if (flag)
        printf("%s is not palindrome", str);
    else
        printf("%s is palindrome", str);

    return 0;
}
```

Output:

```
/tmp/z2gB7BNYgG.o
naman is palindrome
```

Program:10

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Aim:write a c program to implement a simple calculator that can perform addition,subtraction,multiplication,and division.

Program:

```
#include <stdio.h>

int main()

{

   int number1, number2, addition, subtraction, multiply;

   float divide;


   printf("Enter Number 1\n");

   scanf("%d", &number1);

   printf("Enter Number 2\n");

   scanf("%d", &number2);

   addition       = number1 + number2 ;

   subtraction = number1 - number2;

   multiply = number1 * number2;

   divide     = number1 / (float)number2;

   printf("Addition = %d\n",addition);

   printf("Subtraction = %d\n",subtraction);

   printf("Multiplication = %d\n",multiply);

   printf("Division = %.2f\n",divide);


   return 0;

}
```

Output:

```
/tmp/z2gB7BNYgG.o
Enter Number 1
5
Enter Number 2
2
Addition = 7
Subtraction = 3
Multiplication = 10
Division = 2.50
```