

EXPERIMENT NUMBER 1.1

Student name :-

UID:-

Branch:- BE-CSE

Class and Group:-

Semester:- 2nd

AIM: Learn the basics of C++ programming.

PROGRAMS:

- WAP to find average marks of five subjects of a student in a class.
- WAP to swap first and last digits of any number.
- WAP to generate the Fibonacci series up to user specified limit. Write all the missing terms (e.g. 4, 6, 7, 9, 10, 11, 12, 14, 15...) also at the end.

ALGORITHM:

PROGRAM 1.1:

Step 1: Start

Step 2: Read the marks of 5 students from the user

Step 3: find the average using the formula $avg = (m1 + m2 + m3 + m4 + m5) / 5$

Step 4: Display the average

Step 5: Stop

PROGRAM 1.2:

Step 1: Start

Step 2: Enter the number

Step 3: Find the (digits-1), first digit, last digit of a number.

Step 4: Store the last digit in sNum(swapped number) variable.

Step 5: Now store the (digits-1) power of 10s in sNum.

Step 6: Further add all the digits of the number in Snum.

Step 7: Swap the first and last digit of the number.

Step 8: Print the swapped number.

Step 9: Stop.

PROGRAM 1.3:

Step 1: Start

Step 2: Enter the limit

Step 3: Assign t1=0 and t2=1 and then nextTerm = t1 + t2

Step 4: Continue the loop upto limit(n).

Step 5: Print the Fibonacci series.

Step 6: Print non-Fibonacci series.

Step 7: Stop

PROGRAM CODE:

PROGRAM 1.1:

```
#include <iostream>
using namespace std;
int main()
{
int subjects, i,sum=0;
float marks, avg, percentage;
cout << "Name:Karna Jaswanth UId:21BCS9325 \n";
cout << "Enter number of subjects\n";
cin >> subjects;
cout << "Enter marks of subjects\n";
for(i = 0; i < subjects; i++)
{
cin >> marks;
sum += marks;
}
avg = sum / subjects;
cout << "Total Marks = "<< sum;

cout << "\nAverage Marks = "<< avg;
return 0;
}
```

PROGRAM 1.2:

```
#include <iostream>
#include <math.h>
using namespace std;
int main()
{
int n, first, last, sum, digits, nn, a, b;
cout << "Name:Karna Jaswanth UId:21BCS9325 \n";
cout <<" Input any number: ";
cin >> n;
digits =(int)log10(n);
first = n /pow(10, digits);
last = n %10;
a = first *(pow(10, digits));
b = n % a;
n = b /10;
nn = last *(pow(10, digits))+(n *10+ first);
cout <<" The number after swapping the first and last digits are: "<< nn <<
endl;
}
```

PROGRAM 1.3:

```
#include<iostream>
using namespace std;
int main()
{
int n,c,first=0,second=1,next;
int a[20],i,j=0,count=0;
cout << "Name:Karna Jaswanth UId:21BCS9325 \n";
cout<<"Enter the no. of terms of Fibonacci series=";
cin>>n;
cout<<"Terms of Fibonacci series are"<<endl;
for(c=0;c<n;c++)
{
if(c<=1)
next=c;
```

```
else
{
next=first+second;
first=second;
second=next;
}
cout<<next<<endl;
if(next-first>1)
{
for(i=first+1; i<next; i++)
{
a[j]=i;
count++;
j++;
}
}
}
cout<<"Missing numbers of the Fibonacci series are:"<<endl;
for(j=0; j<count; j++)
cout<<a[j]<<endl;
return 0;
}
```

PROGRAM'S EXPLANATION:

PROGRAM 1.1:

Firstly, we have included the header file `iostream` for using the input output functions like `cout` and `cin`. After that I have taken the marks of 5 subjects from the user using `cin` function and calculated their average using the formula $avg=(m1+m2+m3+m4+m5)/5$. So, after calculating the average I displayed the result on the output screen using the `cout` function.

PROGRAM 1.2:

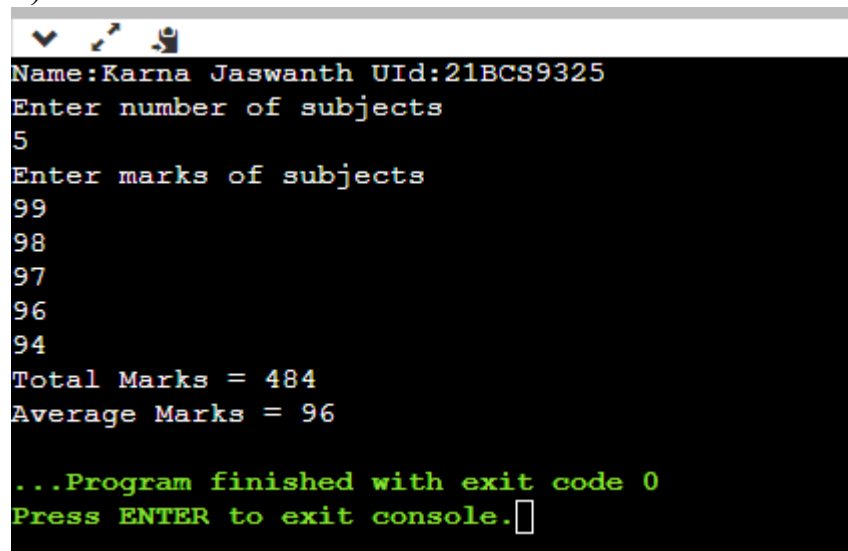
Firstly, we have used the header files `iostream` and `math.h` and then we took the input from the user using `cin` and `cout` function and then we have used the mathematical formulas to swap the first and last digit of the number and then we have printed the number after swapping first and last number using `cout` function.

PROGRAM 1.3:

Firstly, we have to include the header file to use the input(cin) and output(cout) functions, math function, basically include all function directories. When $t1 = 0$ and $t2 = 1$ then next Term = $t1+t2 = 1$ and update the $t1$ from $t2$ and $t2$ from next Term, Now, $t1 = 1$ and $t2 = 2$ then next Term = $t1+t2 = 2$ and again update $t1$ from $t2$ and $t2$ from next Term and the loop will continue until n Finally, print the series. Whereas print the remaining numbers left in loop which is a non-Fibonacci series.

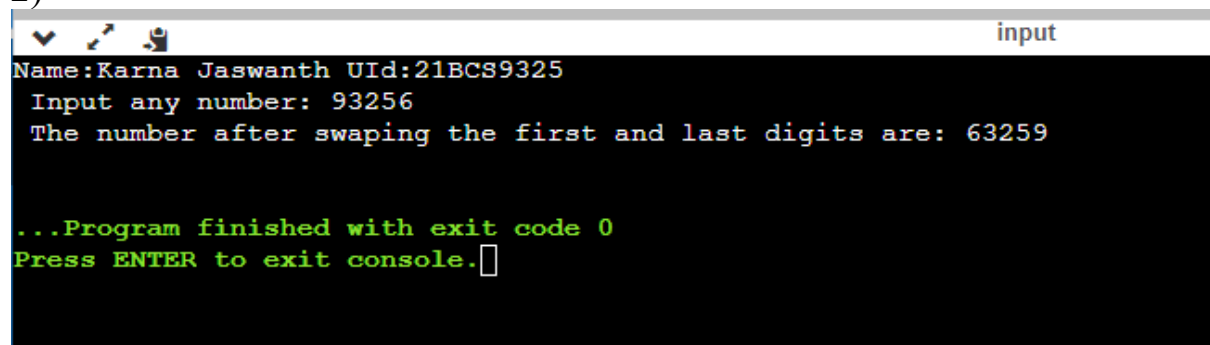
OUTPUTS:-

1)



```
Name:Karna Jaswanth UId:21BCS9325
Enter number of subjects
5
Enter marks of subjects
99
98
97
96
94
Total Marks = 484
Average Marks = 96
...Program finished with exit code 0
Press ENTER to exit console.
```

2)



```
input
Name:Karna Jaswanth UId:21BCS9325
Input any number: 93256
The number after swaping the first and last digits are: 63259
...Program finished with exit code 0
Press ENTER to exit console.
```

```
Name:Karna Jaswanth UID:21BCS9325
Enter the no. of terms of Fibonacci series=7
Terms of Fibonacci series are
0
1
1
2
3
5
8
Missing numbers of the Fibonacci series are:
4
6
7
```

LEARNING OUTCOMES:

- Understand the concepts of object-oriented programming including programming process and compilation process.
- Apply different techniques to decompose a problem and program a solution with its sub modules.
- Analyse and explain the behaviour of simple programs involving the programming addressed in the course.
- Implement and evaluate the programs using the syntax and semantics of object-oriented programming.
- Design the solution of real-world problems in order to determine that the program performs as expected.



EVALUATION COLUMN (To be filled by concerned faculty only)

Sr. No.	Parameters	Maximum Marks	Marks Obtained
1.	Worksheet Completion including writing learning objective/ Outcome	10	
2.	Post-Lab Quiz Result	5	
3.	Student engagement in Simulation/ Performance/ Pre-Lab Questions	5	
4.	Total Marks	20	