

IT161: Introduction to Programming and Problem Solving

Lab 1/Assignment 1

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PROGRAMS

Q.1 Program to find area and circumference of circle. Find area of circle of radius a , where $a=1+\text{last digit of your id}$.

Code:

```
#include <stdio.h>

int main(){
    int radius;

    float pi = 3.14;

    float area;

    float circm;

    printf("\nEnter your Radius: ");

    scanf("%d",&radius);

    circm = 2 * pi * radius;

    area = pi * radius * radius ;

    printf("\nThe Circumference of Circle with radius %d is : %.2f\n",radius,circm);

    printf("The Area of Circle with radius %d is : %.2f\n",radius,area);

    return 0;
}
```

Output:

```
Siddharth at ...\\IT101\\LAB1  
./a.exe  
  
Enter your Radius: 2  
  
The Circumference of Circle with radius 2 is : 12.56  
The Area of Circle with radius 2 is : 12.56
```

Q.2 Program to convert temperature from degree centigrade to Fahrenheit.

Code:

```
#include <stdio.h>  
  
int main()  
{  
    float Fah;  
    float Cel;  
  
    printf("\nEnter your Temperature in Celsius: ");  
    scanf("%f",&Cel);  
  
    Fah =(Cel * 9/5) + 32;  
  
    printf("\nThe Temperature in Fahrenhite for %.2f degree celsius is :  
%.2f\n",Cel,Fah);  
  
    return 0;  
}
```

Output:

```
Siddharth at ...\\IT101\\LAB1  
./a.exe  
  
Enter your Temperature in Celsius: 30  
  
The Temperature in Fahrenhite for 30.00 degree celsius is : 86.00
```

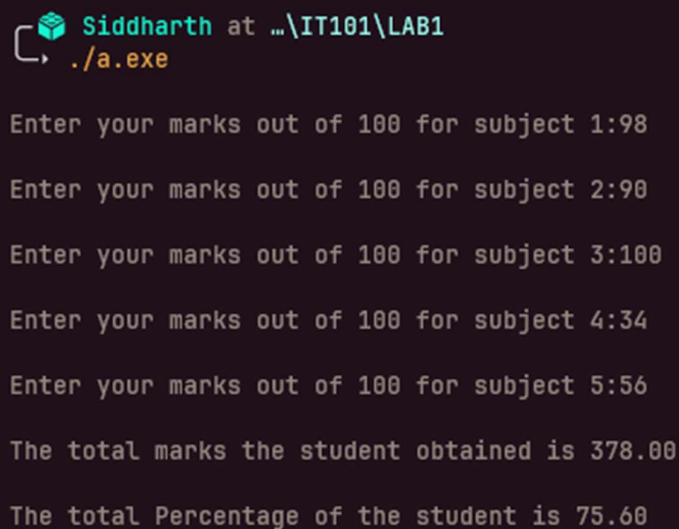
Q.3 Program to calculate sum of marks of 5 subjects and find percentage.

Code:

```
#include <stdio.h>

int main(){
    float temp;
    float total_sum=0;
    float percentage;
    for(int i=1; i <= 5;i++){
        printf("\nEnter your marks out of 100 for subject %d:",i);
        scanf("%f",&temp);
        total_sum =total_sum + temp;
    }
    percentage = (total_sum/500) * 100;
    printf("\nThe total marks the student obtained is %.2f\n",total_sum);
    printf("\nThe total Percentage of the student is %.2f\n",percentage);
    return 0;
}
```

Output:



```
Siddharth at ...\IT101\LAB1
./a.exe

Enter your marks out of 100 for subject 1:98
Enter your marks out of 100 for subject 2:90
Enter your marks out of 100 for subject 3:100
Enter your marks out of 100 for subject 4:34
Enter your marks out of 100 for subject 5:56

The total marks the student obtained is 378.00
The total Percentage of the student is 75.60
```

Q.4 Program to show swap of two no's without using third variable.

Code:

```
#include <stdio.h>

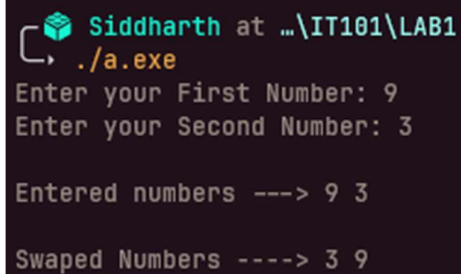
int main(){
    int num1;
    int num2;
    printf("Enter your First Number: ");
    scanf("%d",&num1);
    printf("Enter your Second Number: ");
    scanf("%d",&num2);

    printf("\nEntered numbers ---> %d %d\n",num1,num2);

    num2 = num1 + num2;
    num1 = num2 - num1;
    num2 = num2 - num1;

    printf("\nSwaped Numbers ----> %d %d\n",num1,num2);
    return 0;
}
```

Output:

A terminal window with a dark background. The prompt is 'Siddharth at ...\IT101\LAB1'. The user enters './a.exe'. The program prompts for two numbers: 'Enter your First Number: 9' and 'Enter your Second Number: 3'. It then displays 'Entered numbers ---> 9 3' and 'Swaped Numbers ----> 3 9'.

```
Siddharth at ...\\IT101\\LAB1
./a.exe
Enter your First Number: 9
Enter your Second Number: 3

Entered numbers ---> 9 3

Swaped Numbers ----> 3 9
```

Q.5 Program to reverse the digits of a given number.

Code:

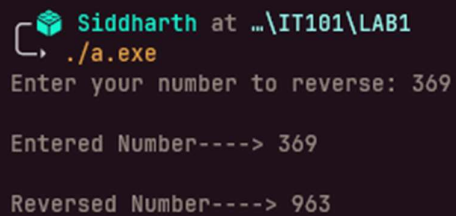
```
#include <stdio.h>

int main(){
    int num;
    int reversed = 0;
    int temp_digit;

    printf("Enter your number to reverse: ");
    scanf("%d",&num);

    printf("\nEntered Number----> %d\n",num);
    while(num != 0){
        temp_digit = num % 10;
        num = num / 10;
        reversed = reversed * 10 + temp_digit;
    }
    printf("\nReversed Number----> %d\n",reversed);
    return 0;
}
```

Output:

A terminal window with a dark background. The prompt shows the user 'Siddharth' at the directory '...\\IT101\\LAB1'. The command './a.exe' has been executed. The program prompts 'Enter your number to reverse: 369'. It then displays 'Entered Number----> 369' and finally 'Reversed Number----> 963'.

```
Siddharth at ...\\IT101\\LAB1
./a.exe
Enter your number to reverse: 369

Entered Number----> 369

Reversed Number----> 963
```

Q.6 Program to find the greatest (and least) of 3 numbers.

Code:

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

```
int main(){
```

```
    int n1;
```

```
    int n2;
```

```
    int n3;
```

```
    int greatest;
```

```
    printf("\nEnter your first number: ");
```

```
    scanf("%d",&n1);
```

```
    printf("\nEnter your second number: ");
```

```
    scanf("%d",&n2);
```

```
    printf("\nEnter your second number: ");
```

```
    scanf("%d",&n3);
```

```
    if(n1>n2 && n1>n3){
```

```
        printf("\nThe Greatest number is ---> %d\n",n1);
```

```
    }
```

```
    else if(n2>n1 && n2>n3){
```

```
        printf("\nThe Greatest number is ---> %d\n",n2);
```

```
    }
```

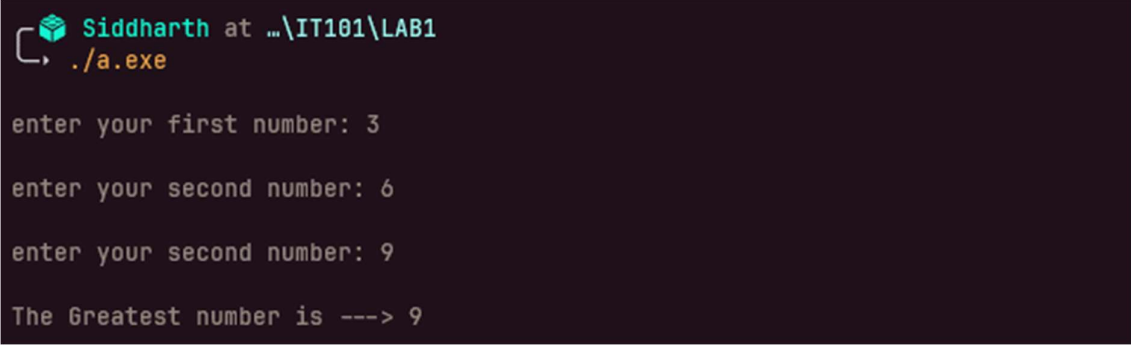
```
    else if(n3>n2 && n3>n1){
```

```

        printf("\nThe Greatest number is ---> %d\n",n3);
    }
    return 0;
}

```

Output:



```

Siddharth at ...\IT101\LAB1
./a.exe

enter your first number: 3

enter your second number: 6

enter your second number: 9

The Greatest number is ---> 9

```

Q.7 Program to print a multiplication table of any number.

Code:

```

#include <stdio.h>

int main(){
    int num;

    printf("\nEnter your number: ");

    scanf("%d",&num);

    printf("\nHeres your table for %d ---> \n",num);

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

    return 0;
}

```

Output:

```
Siddharth at ...\\IT101\\LAB1
./a.exe

Enter your number: 3

Heres your table for 3 --->
3 X 1 = 3
3 X 2 = 6
3 X 3 = 9
3 X 4 = 12
3 X 5 = 15
3 X 6 = 18
3 X 7 = 21
3 X 8 = 24
3 X 9 = 27
3 X 10 = 30
```

Q.8 Prime testing algorithm

Code:

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

```
int main(){
```

```
    int num;
```

```
    int temp = 0;
```

```
    printf("\nEnter your number: ");
```

```
    scanf("%d",&num);
```

```
    for(int i = 2; i < num; i++){
```

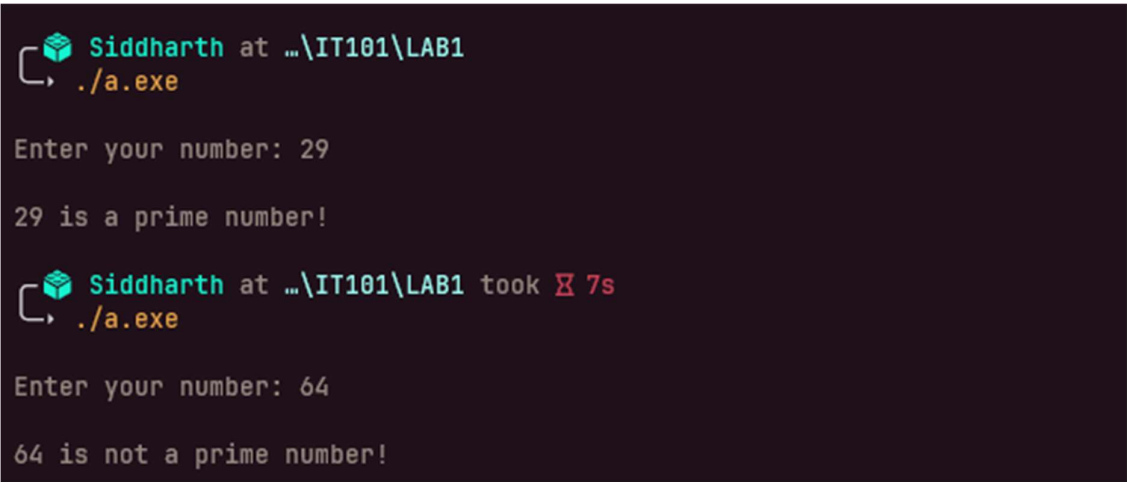
```
        if(num % i == 0){
```



```
        temp += 1;
    }
}
if(temp == 0){
    printf("\n%d is a prime number!\n",num);
}
else{
    printf("\n%d is not a prime number!\n",num);
}

return 0;
}
```

Output:



```
Siddharth at ...\IT101\LAB1
└─ ./a.exe

Enter your number: 29

29 is a prime number!

Siddharth at ...\IT101\LAB1 took 7s
└─ ./a.exe

Enter your number: 64

64 is not a prime number!
```

Q.9 Sum: input: n , output: $1+\frac{1}{2}+\frac{1}{3}+\dots+\frac{1}{n}$.

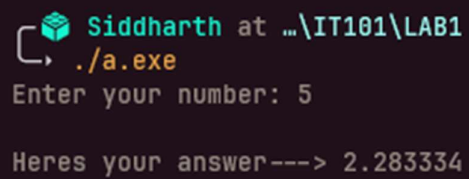
Code:

```
#include <stdio.h>

int main(){
    int  $n$ ;
    float  $ans=0$ ;
    float  $temp$ ;
    printf("Enter your number: ");
    scanf("%d",& $n$ );

    for(int  $i = 1$ ;  $i <= n$ ;  $i++$ ){
         $temp = 1/(\text{float})i$ ;
         $ans = temp + ans$ ;
    }
    printf("\nHeres your answer---> %f\n", $ans$ );
    return 0;
}
```

Output:



```
Siddharth at ...\\IT101\\LAB1
./a.exe
Enter your number: 5
Heres your answer---> 2.283334
```

Q.10 Print Fibonacci sequence of given length and ratio of two consecutive Fibonacci numbers.

Code:

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

```
int main(){
```

```
    int n;
```

```
    int num1=0;
```

```
    int num2=1;
```

```
    int next_number;
```

```
    float ratio;
```

```
    printf("\nEnter your number: ");
```

```
    scanf("%d",&n);
```

```
    printf("\nHeres your series---> \n");
```

```
    printf("\nHeres the first number---> 0\n");
```

```
    for(int i = 1; i <= n; i++){
```

```
        next_number = num2 + num1 ;
```

```
        printf("\nHeres next number---> %d",next_number);
```

```
        if(num1 != 0){
```

```

    ratio = (float)num2/(float)num1;

    printf("\nRatio for %d and %d is : %.2f\n",num2,num1,ratio);
}

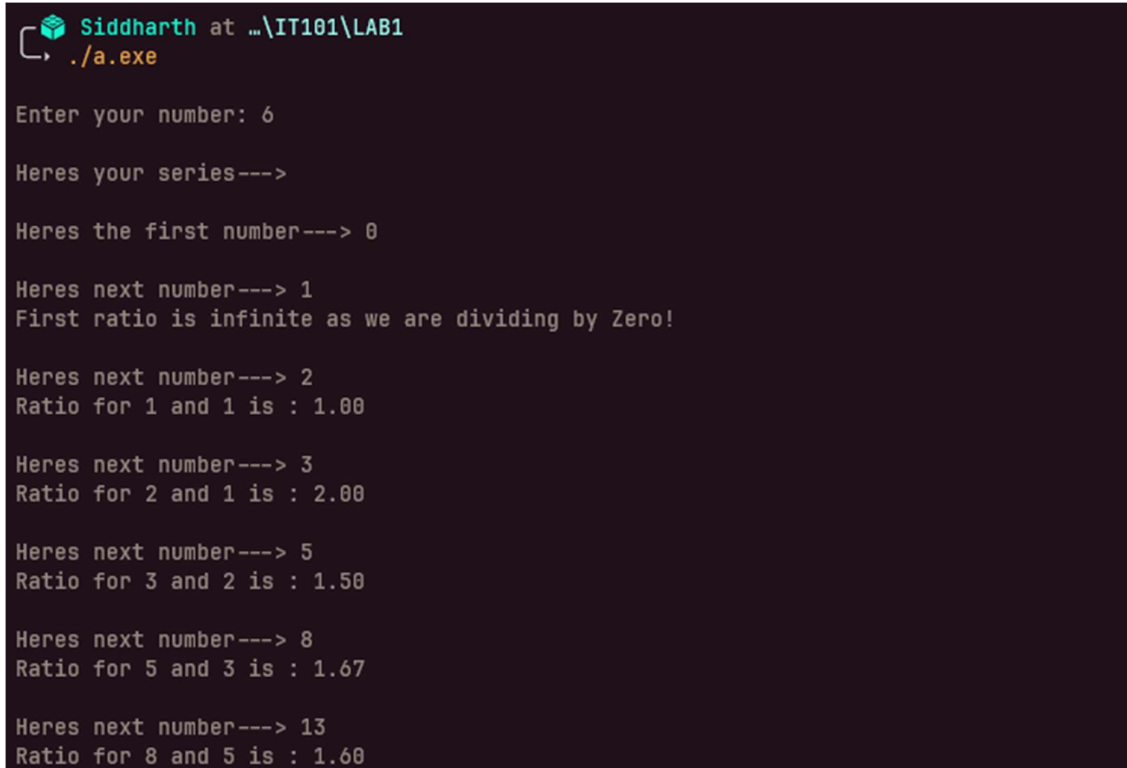
else if(num1 == 0){
    printf("\nFirst ratio is infinite as we are dividing by Zero!\n");
}

num1 = num2;
num2 = next_number;
}

return 0;
}

```

Output:



A terminal window with a dark background. The title bar shows a user icon, the name 'Siddharth', and the path 'at ...\IT101\LAB1'. The prompt is './a.exe'. The program execution shows a series of inputs and outputs. The first input is '6', followed by '0', '1', '2', '3', '5', '8', and '13'. The program outputs the ratio for each pair of consecutive numbers, except for the first pair (6, 0) where it outputs an infinity message.

```

Siddharth at ...\IT101\LAB1
./a.exe

Enter your number: 6

Heres your series--->

Heres the first number---> 0

Heres next number---> 1
First ratio is infinite as we are dividing by Zero!

Heres next number---> 2
Ratio for 1 and 1 is : 1.00

Heres next number---> 3
Ratio for 2 and 1 is : 2.00

Heres next number---> 5
Ratio for 3 and 2 is : 1.50

Heres next number---> 8
Ratio for 5 and 3 is : 1.67

Heres next number---> 13
Ratio for 8 and 5 is : 1.60

```