

```
    return None # Input language could not be determined
    parsedInput = self.parseInputToLanguageModel(inputString, inputLanguage, None)
    if not parsedInput or not self.model:
        return None
    context.append(parsedInput) # Add new conversation entry to context
    return (self.model.generateLMOutput(parsedInput), context)

def parseInputToLanguageModel(inputString, inputLanguage, context):
    if self.model is None or self.model.language != inputLanguage:
        # LM is not initialised or has wrong language, load LM
        self.model = self.loadAllLanguageModelsFromDatabase(inputLanguage)
    if self.model is None or not self.runModel(self.model, context):
        raise Exception("AI language model load failed")
    return None
    self.model.setLMContext(context) # Put past conversation context into LM
    llmInputParser = self.model.getInputParser()
    return llmInputParser.parseInput(inputString)

def generateLMOutput(parsedInput):
    llmOutput = self.model.getLMContext()
```

PROGRAMMING FUNDAMENTALS

LAB TASK

Name: Mohsin Ali
Roll Number: 25P-0545
Section: BCS-1C

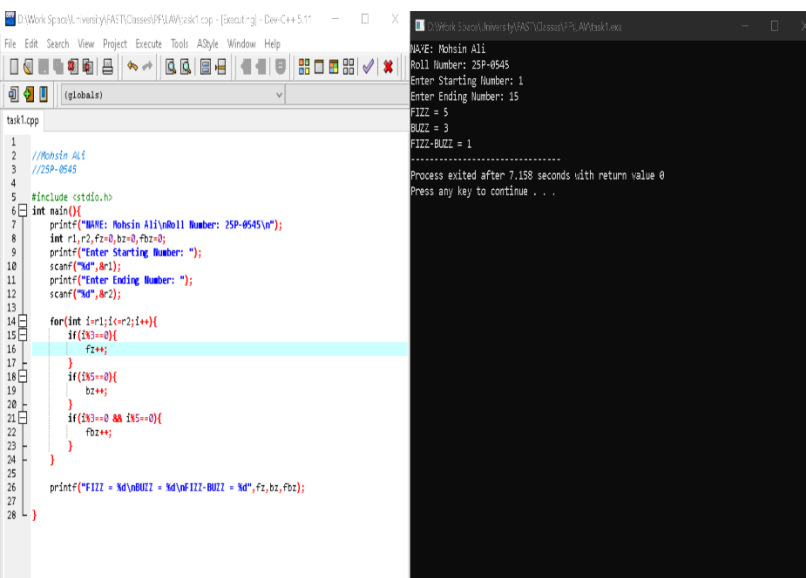
QUESTION# 01

Write a program to take range from user
starting number and ending number), count
the number fizz, Buzz and Fizz-Buzz,
in the given range

Fizz In Multiple of 3

Buzz is Multiple of 5

Fizz-Buzz is Multiple of 3 and 5



The screenshot shows a C++ IDE with two windows. The left window displays the source code for a program that takes a starting and ending number from the user and counts Fizz, Buzz, and Fizz-Buzz numbers in that range. The right window shows the program's execution output, where the user has entered 'Mohsin Ali' as the name and '25P-0545' as the roll number, and the program has successfully calculated the counts for the range 1 to 15.

```
1 //Mohsin Ali
2 //25P-0545
3
4 #include <stdio.h>
5
6 int main(){
7     printf("NAME: Mohsin Ali\nRoll Number: 25P-0545\n");
8     int r1,r2,fz=0,bz=0,fbz=0;
9     printf("Enter Starting Number: ");
10    scanf("%d",&r1);
11    printf("Enter Ending Number: ");
12    scanf("%d",&r2);
13
14    for(int i=r1;i<=r2;i++){
15        if(i%3==0){
16            fz++;
17        }
18        if(i%5==0){
19            bz++;
20        }
21        if(i%3==0 && i%5==0){
22            fbz++;
23        }
24    }
25
26    printf("FIZZ = %d\nBUZZ = %d\nFIZZ-BUZZ = %d",fz,bz,fbz);
27
28 }
```

Output:

```
NAME: Mohsin Ali
Roll Number: 25P-0545
Enter Starting Number: 1
Enter Ending Number: 15
FIZZ = 5
BUZZ = 3
FIZZ-BUZZ = 1
.....
Process exited after 7.158 seconds with return value 0
Press any key to continue . . .
```

```
//Mohsin Ali
//25P-0545
#include <stdio.h>
int main(){
printf("NAME: Mohsin Ali\nRoll Number: 25P-0545\n");
int r1,r2,fz=0,bz=0,fbz=0;
printf("Enter Starting Number: ");
scanf("%d",&r1);
printf("Enter Ending Number: ");
scanf("%d",&r2);

for(int i=r1;i<=r2;i++){
if(i%3==0){
fz++;
}
if(i%5==0){
bz++;
}
if(i%3==0 && i%5==0){
fbz++;
}
}

printf("FIZZ = %d\nBUZZ = %d\nFIZZ-BUZZ = %d",fz,bz,fbz);
}
```

QUESTION# 02

Write a program that will generate the

Fibonacci series up to 10000.

Also find the sum of

the generated Fibonacci numbers

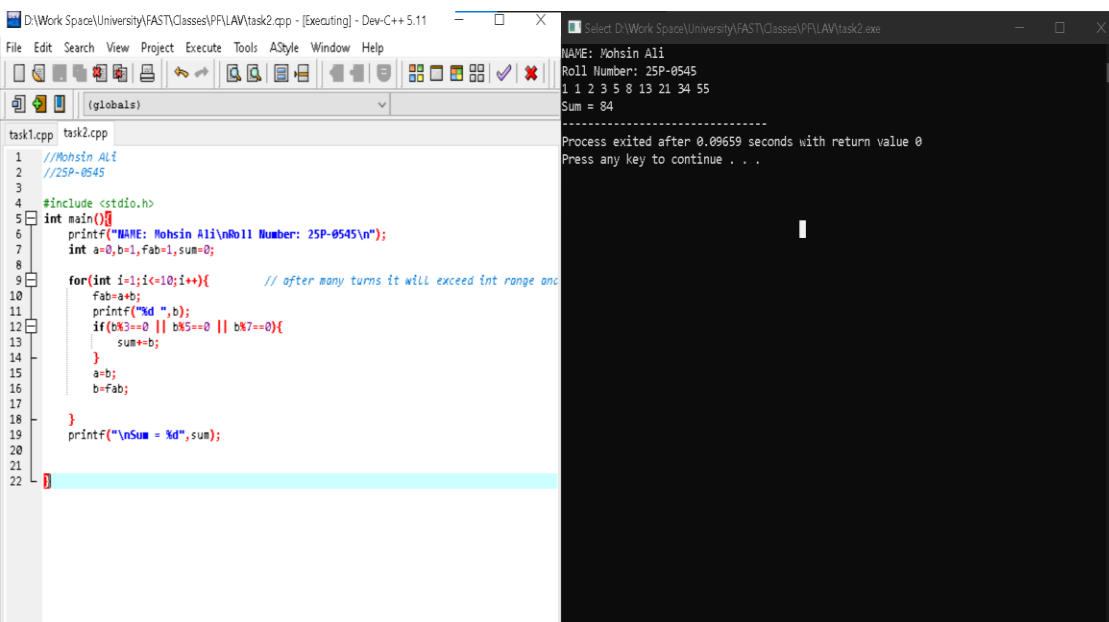
divisible by 3, 5 or 7 only.

An example of the Fibonacci series is:

1 1 2 3 5 8 13 21.....

Note: Do this task by using a for

loop DO NOT use arrays for this.



The screenshot shows a C++ program in Dev-C++ with the following source code in task1.cpp:

```
1 //Mohsin Ali
2 //25P-0545
3
4 #include <stdio.h>
5 int main()
6 {
7     printf("NAME: Mohsin Ali\nRoll Number: 25P-0545\n");
8     int a=0,b=1,fab=1,sum=0;
9
10    for(int i=1;i<=10;i++){
11        fab=a+b;
12        printf("%d ",b);
13        if(b%3==0 || b%5==0 || b%7==0){
14            sum+=b;
15        }
16        a=b;
17        b=fab;
18    }
19    printf("\nSum = %d",sum);
20 }
21
22
```

The execution output in task2.exe is as follows:

```
NAME: Mohsin Ali
Roll Number: 25P-0545
1 1 2 3 5 8 13 21 34 55
Sum = 84
.....
Process exited after 0.09659 seconds with return value 0
Press any key to continue . . .
```

```
//Mohsin Ali
```

```
//25P-0545
```

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

```
int main(){
```

```
printf("NAME: Mohsin Ali\nRoll
Number: 25P-0545\n");
```

```
int a=0,b=1,fab=1,sum=0;
```

```
for(int i=1;i<=10;i++){
```

```
/* after many turns it will
exceed int range and then it will print
garbage values */
```

```
fab=a+b;
```

```
printf("%d ",b);
```

```
if(b%3==0 || b%5==0 || b%7==0){
```

```
sum+=b;
```

```
}
```

```
a=b;
```

```
b=fab;
```

```
}
```

```
printf("\nSum = %d",sum);
```

```
}
```

QUESTION# 03

Write a C Program to compute the
LCM and GCD of two numbers.

```
D:\Work Space\University\FAST\Classes\PF\LA\task3.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
(task3.cpp)
task1.cpp task2.cpp task3.cpp
1 //Mohsin Ali
2 //25P-0545
3
4 #include <stdio.h>
5 int main(){
6     printf("NAME: Mohsin Ali\nRoll Number: 25P-0545\n");
7     int n1,n2,temp,gcd,lcm;
8     int x,y;
9     printf("Enter Num1: ");
10    scanf("%d",&n1);
11    printf("Enter Num2: ");
12    scanf("%d",&n2);
13
14    x=n1,y=n2;
15    while(n2!=0){
16        temp=n2;
17        n2=n1%n2;
18        n1=temp;
19    }
20    gcd=n1;
21    lcm=(x*y)/gcd;
22
23    printf("LCM = %d\nGCD = %d",lcm,gcd);
24
25
26
27 }
```

```
D:\Work Space\University\FAST\Classes\PF\LA\task3.exe
NAME: Mohsin Ali
Roll Number: 25P-0545
Enter Num1: 4
Enter Num2: 16
LCM = 16
GCD = 4
-----
Process exited after 10.38 seconds with return value 0
Press any key to continue . . .
```

```
//Mohsin Ali
//25P-0545

#include <stdio.h>

int main(){

printf("NAME: Mohsin Ali\nRoll
Number: 25P-0545\n");

int n1,n2,temp,gcd,lcm;

int x,y;

printf("Enter Num1: ");

scanf("%d",&n1);

printf("Enter Num2: ");

scanf("%d",&n2);

x=n1,y=n2;

while(n2!=0){

temp=n2;

n2=n1%n2;

n1=temp;

}

gcd=n1;

lcm=(x*y)/gcd;

printf("LCM = %d\nGCD =
%d",lcm,gcd);

}
```

QUESTION# 04

Consider Two integers a and b taken as input from the user.

Using Loops iterate the value of a till the value of b.

If the value of a<=9

the output should correspond

to the English representation of the numbers i.e., 8=Eight, 9=Nine etc.

If the iteration exceeds 9 then the

programs should print if the exceeded

number is even or

odd.

```
task4.cpp
1 // Mohsin Ali
2 //25P-0545
3
4 #include <stdio.h>
5 int main()
6 {
7     printf("NAME: Mohsin Ali\nRoll Number: 25P-0545\n");
8
9     int a,b;
10    printf("Enter Two Numbers: ");
11    scanf("%d %d",&a,&b);
12
13    for(int i=a;i<=b;i++){
14        if(i==1)
15            printf("ONE\n");
16        if(i==2)
17            printf("TWO\n");
18        if(i==3)
19            printf("THREE\n");
20        if(i==4)
21            printf("FOUR\n");
22        if(i==5)
23            printf("FIVE\n");
24        if(i==6)
25            printf("SIX\n");
26        if(i==7)
27            printf("SEVEN\n");
28        if(i==8)
29            printf("EIGHT\n");
30        if(i==9)
31            printf("NINE\n");
32    }
33    if(i>9){
34        if(i%2==0){
35            printf("EVEN\n");
36        }
37        else{
38            printf("ODD\n");
39        }
40    }
41}
```

NAME: Mohsin Ali
Roll Number: 25P-0545
Enter Two Numbers: 8 11
EIGHT
NINE
EVEN
ODD

Process exited after 9.92 seconds with return value 0
Press any key to continue . . .

Source Code:

```
// Mohsin Ali

//25P-0545

#include <stdio.h>

int main(){

printf("NAME: Mohsin Ali\nRoll Number: 25P-0545\n");

int a,b;

printf("Enter Two Numbers: ");

scanf("%d %d",&a,&b);

for(int i=a;i<=b;i++){

if(i<=9){

if(i==1)

printf("ONE\n");

if(i==2)

printf("TWO\n");

if(i==3)

printf("THREE\n");

if(i==4)

printf("FOUR\n");

if(i==5)

printf("FIVE\n");

if(i==6)

printf("SIX\n");

if(i==7)

printf("SEVEN\n");

if(i==8)

printf("EIGHT\n");

if(i==9)

printf("NINE\n");

}

if(i>9){

if(i%2==0){

printf("EVEN\n");

}else{

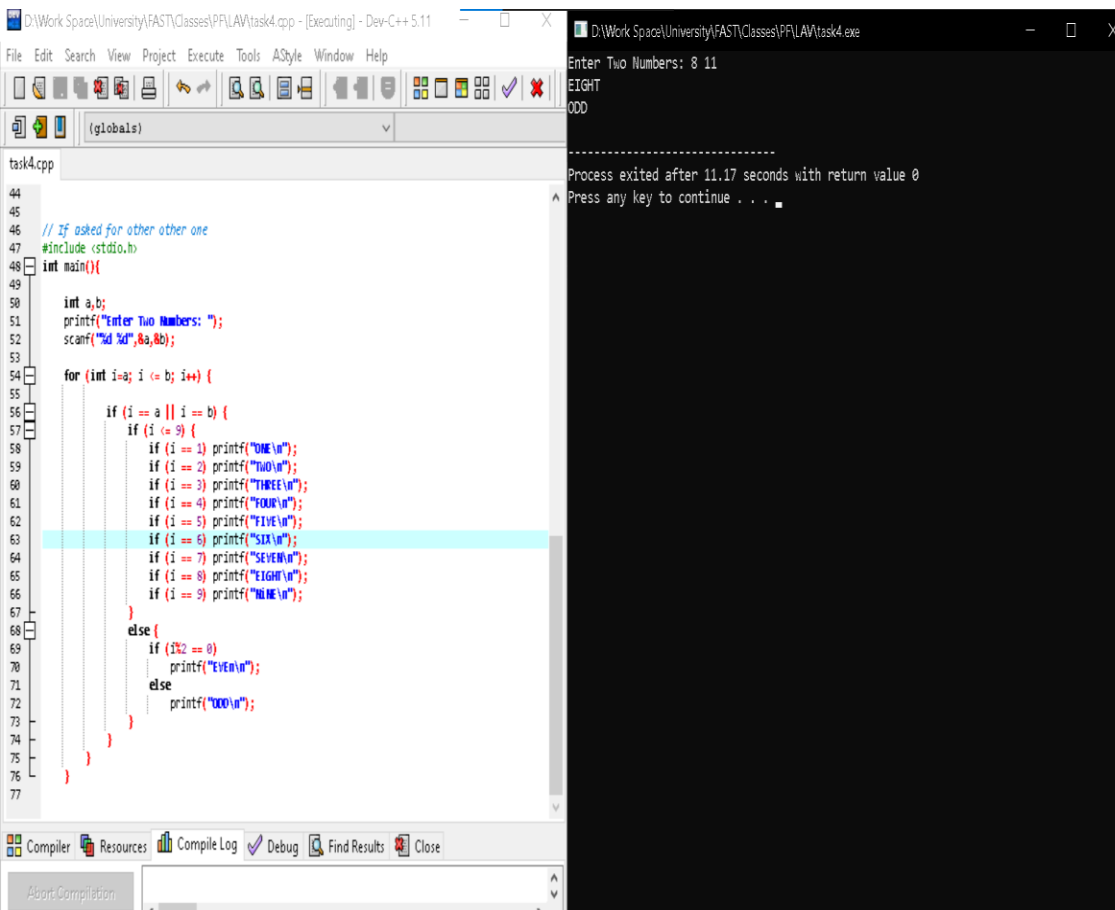
printf("ODD\n");

}

}

}return 0;}
```

Another Method to solve this Task



The screenshot shows the Dev-C++ IDE with a C++ program in the editor and its execution output in the console. The program prompts the user to enter two numbers, 8 and 11, and then prints the words ONE through NINE for each number. The console output shows the numbers 8 and 11, followed by the words ONE through NINE for each number, and then the words EIGHT and NINE for the number 8, and the word ODD for the number 11. The program exits after 11.17 seconds with a return value of 0.

```
task4.cpp
44
45
46 // If asked for other other one
47 #include <stdio.h>
48 int main(){
49
50     int a,b;
51     printf("Enter Two Numbers: ");
52     scanf("%d %d",&a,&b);
53
54     for (int i=a; i <= b; i++) {
55
56         if (i == a || i == b) {
57             if (i <= 9) {
58                 if (i == 1) printf("ONE\n");
59                 if (i == 2) printf("TWO\n");
60                 if (i == 3) printf("THREE\n");
61                 if (i == 4) printf("FOUR\n");
62                 if (i == 5) printf("FIVE\n");
63                 if (i == 6) printf("SIX\n");
64                 if (i == 7) printf("SEVEN\n");
65                 if (i == 8) printf("EIGHT\n");
66                 if (i == 9) printf("NINE\n");
67             }
68             else {
69                 if (i%2 == 0)
70                     printf("EVEN\n");
71                 else
72                     printf("ODD\n");
73             }
74         }
75     }
76 }
77
```

```
Enter Two Numbers: 8 11
8
11
ONE
TWO
THREE
FOUR
FIVE
SIX
SEVEN
EIGHT
NINE
EIGHT
NINE
ODD
Process exited after 11.17 seconds with return value 0
Press any key to continue . . .
```

```
//Mohsin Ali

//25P-0545

#include <stdio.h>

int main(){

    int a,b;

    printf("Enter Two Numbers: ");

    scanf("%d %d",&a,&b);

    for (int i=a; i <= b; i++) {

        if (i == a || i == b) {

            if (i <= 9) {

                if (i == 1) printf("ONE\n");

                if (i == 2) printf("TWO\n");

                if (i == 3) printf("THREE\n");

                if (i == 4) printf("FOUR\n");

                if (i == 5) printf("FIVE\n");

                if (i == 6) printf("SIX\n");

                if (i == 7) printf("SEVEN\n");

                if (i == 8) printf("EIGHT\n");

                if (i == 9) printf("NiNE\n");

            }

            else {

                if (i%2 == 0)

                    printf("EVEN\n");

                else

                    printf("ODD\n");

            }

        }

    }

}
```

QUESTION#05

Write a C program that uses
one-dimensional array name
daily_temp to store one-
week temperature reading.

Declare array with size of 7
e.g., {15,28,35,30,12,25,40}

Classify temperature using these
parameters

Cold day >>> temp<=20

Mild day >>> temp>20
and temp<=35

Hot day >>> temp>35

Count number of Cold, mild and hot day

```
//Mohsin Ali
```

```
//25P-0545
```

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

```
int main(){
```

```
int size=7;
```

```
int
```

```
temp[size]={15,25,30,33,11,23,43};
```

```
int cold=0,mild=0,hot=0;
```

```
for(int i=0;i<size;i++){
```

```
if(temp[i]<=20)
```

```
cold++;
```

```
if(temp[i]>20 && temp[i]<35)
```

```
mild++;
```

```
if(temp[i]>=35)
```

```
hot++;
```

```
}
```

```
printf("Total Cold Day (<=20) =  
%d\nTotal Mild Day (20 - 35) =  
%d\nTotal Hot Day (>35) =  
%d",cold,mild,hot);
```

```
}
```

The screenshot shows a Dev-C++ environment with two windows. The left window displays the source code for 'task5.cpp', which includes `<stdio.h>` and defines a `main` function. Inside `main`, an array `temp` of size 7 is initialized with values {15, 25, 30, 33, 11, 23, 43}. Three counters, `cold`, `mild`, and `hot`, are set to 0. A `for` loop iterates through the array, classifying each temperature: `cold++` for `temp[i] <= 20`, `mild++` for `temp[i] > 20 && temp[i] < 35`, and `hot++` for `temp[i] >= 35`. Finally, `printf` prints the counts for each category. The right window shows the program's output: 'Total Cold Day (<=20) = 2', 'Total Mild Day (20 - 35) = 4', and 'Total Hot Day (>35) = 1'. It also shows the process exiting after 0.1352 seconds with a return value of 0.

```
task5.cpp task5.cpp
1 #include <stdio.h>
2 int main()
3 {
4     int size=7;
5     int temp[size]={15,25,30,33,11,23,43};
6     int cold=0,mild=0,hot=0;
7
8     for(int i=0;i<size;i++){
9         if(temp[i]<=20)
10             cold++;
11         if(temp[i]>20 && temp[i]<35)
12             mild++;
13         if(temp[i]>=35)
14             hot++;
15     }
16
17     printf("Total Cold Day (<=20) = %d\nTotal Mild Day (20 - 35) = %d\nTotal Hot Day (>35) = %d",cold,mild,hot);
18
19 }
```

```
Total Cold Day (<=20) = 2
Total Mild Day (20 - 35) = 4
Total Hot Day (>35) = 1
Process exited after 0.1352 seconds with return value 0
Press any key to continue . . .
```


QUESTION# 06

Write a C program that produces
the following output:

0 0 0 0

1 1

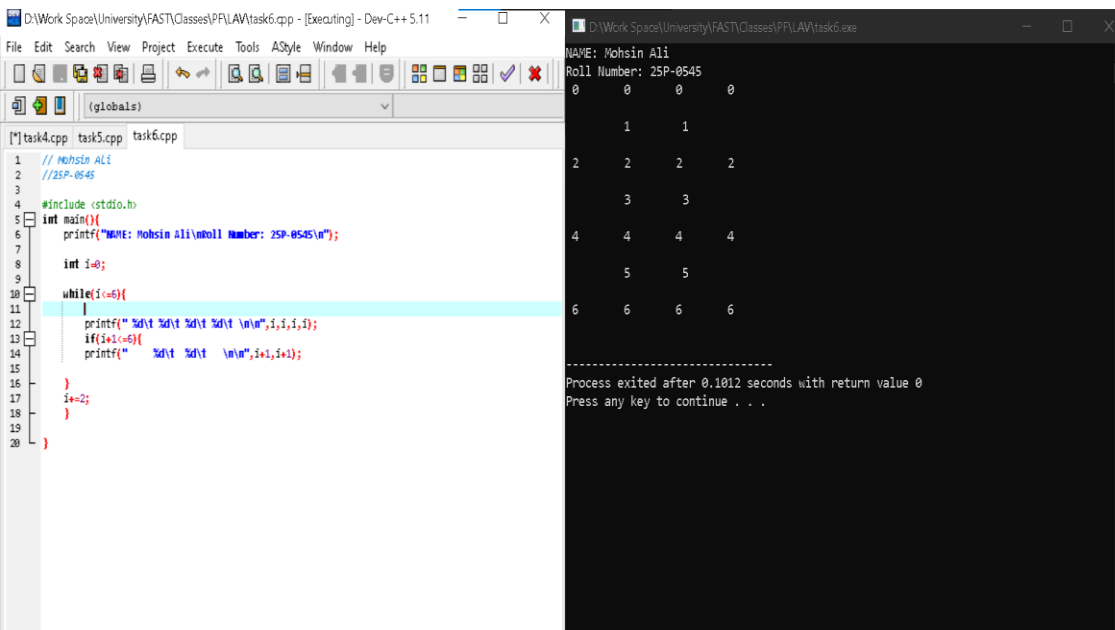
2 2 2 2

3 3

4 4 4 4

5 5

6 6 6 6



The screenshot shows a C program in Dev-C++ and its output. The program is named task6.cpp and is located in D:\Work Space\University\FAST\Classes\PPL\AV\task6.cpp. The code is as follows:

```
1 // Mohsin Ali
2 // 25P-0545
3
4 #include <stdio.h>
5 int main(){
6     printf("NAME: Mohsin Ali\nRoll Number: 25P-0545\n");
7
8     int i=0;
9
10    while(i<=6){
11        |
12        printf(" %d\t %d\t %d\t %d\t \n\n",i,i,i,i);
13        if(i<=6){
14            printf(" %d\t %d\t \n\n",i+1,i+1);
15        }
16        i+=2;
17    }
18 }
19
20 )
```

The output of the program is:

```
NAME: Mohsin Ali
Roll Number: 25P-0545
0 0 0 0
1 1
2 2 2 2
3 3
4 4 4 4
5 5
6 6 6 6
-----
Process exited after 0.1012 seconds with return value 0
Press any key to continue . . .
```

```
// Mohsin Ali
```

```
//25P-0545
```

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

```
int main(){
```

```
printf("NAME: Mohsin Ali\nRoll
Number: 25P-0545\n");
```

```
int i=0;
```

```
while(i<=6){
```

```
printf(" %d\t %d\t %d\t %d\t
\n\n",i,i,i,i);
```

```
if(i+1<=6){
```

```
printf(" %d\t %d\t
\n\n",i+1,i+1);
```

```
}
```

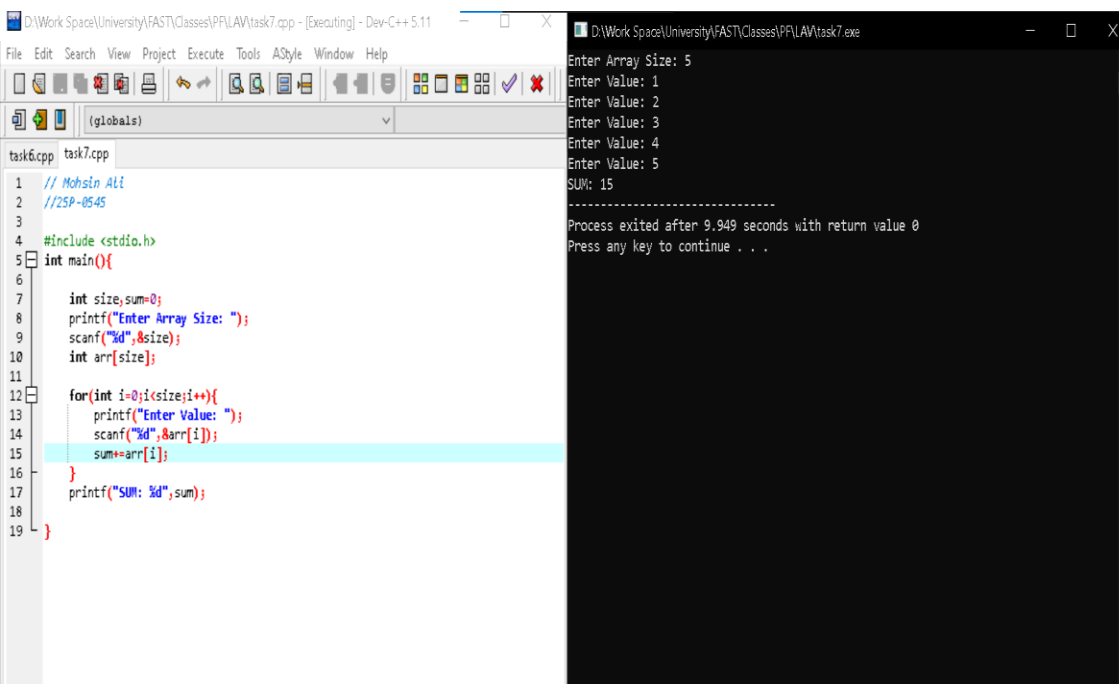
```
i+=2;
```

```
}
```

```
}
```

QUESTION# 07

Write a C Program that takes a user
input array and prints the sum of its elements.



The image shows two windows from a Dev-C++ IDE. The left window displays the source code for 'task7.cpp', and the right window shows the program's execution output.

```
1 // Mohsin Ali
2 //25P-0545
3
4 #include <stdio.h>
5 int main()
6 {
7     int size,sum=0;
8     printf("Enter Array Size: ");
9     scanf("%d",&size);
10    int arr[size];
11
12    for(int i=0;i<size;i++){
13        printf("Enter Value: ");
14        scanf("%d",&arr[i]);
15        sum+=arr[i];
16    }
17    printf("SUM: %d",sum);
18 }
19 }
```

The execution output window shows the following interaction:

```
Enter Array Size: 5
Enter Value: 1
Enter Value: 2
Enter Value: 3
Enter Value: 4
Enter Value: 5
SUM: 15
-----
Process exited after 9.949 seconds with return value 0
Press any key to continue . . .
```

```
// Mohsin Ali
//25P-0545

#include <stdio.h>

int main(){

    int size,sum=0;

    printf("Enter Array Size: ");

    scanf("%d",&size);

    int arr[size];

    for(int i=0;i<size;i++){

        printf("Enter Value: ");

        scanf("%d",&arr[i]);

        sum+=arr[i];

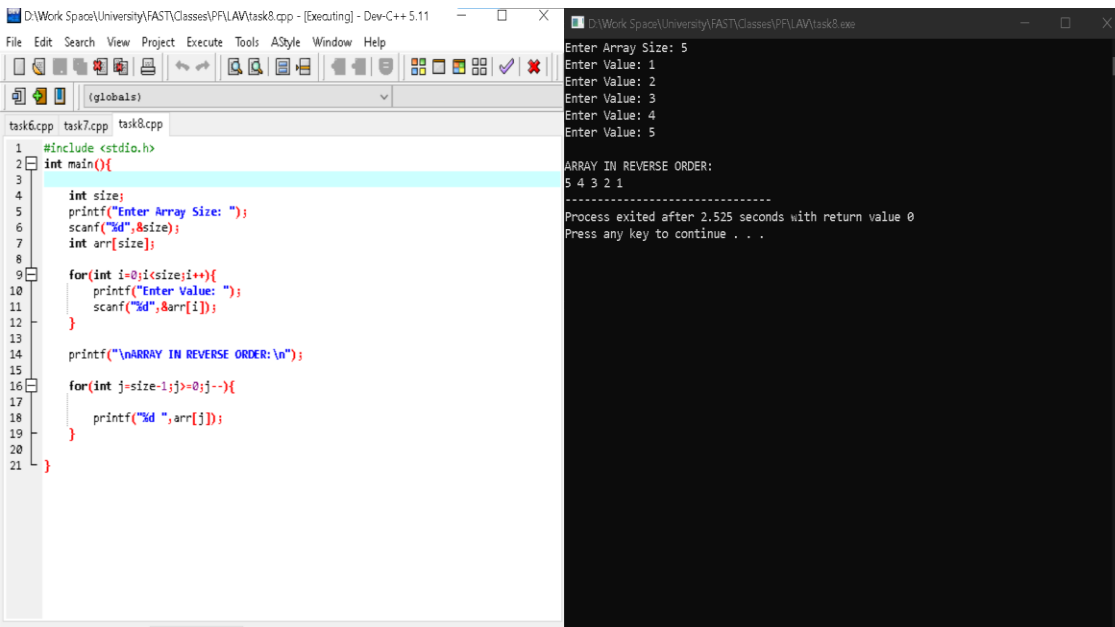
    }

    printf("SUM: %d",sum);

}
```

QUESTION# 08

Write a program in C to read n number of values in an array and display it in reverse order.



The screenshot displays two windows from the Dev-C++ IDE. The left window, titled 'task8.cpp', contains the following C code:

```
1 #include <stdio.h>
2 int main()
3 {
4     int size;
5     printf("Enter Array Size: ");
6     scanf("%d",&size);
7     int arr[size];
8
9     for(int i=0;i<size;i++){
10         printf("Enter Value: ");
11         scanf("%d",&arr[i]);
12     }
13
14     printf("\nARRAY IN REVERSE ORDER:\n");
15
16     for(int j=size-1;j>=0;j--){
17         printf("%d ",arr[j]);
18     }
19
20 }
21
```

The right window, titled 'task8.exe', shows the program's execution. It prompts for the array size (5) and then for five values (1, 2, 3, 4, 5). The output displays the array in reverse order: 5 4 3 2 1. A message at the bottom indicates the process exited after 2.525 seconds.

```
#include <stdio.h>

int main(){

    int size;

    printf("Enter Array Size: ");
    scanf("%d",&size);

    int arr[size];

    for(int i=0;i<size;i++){

        printf("Enter Value: ");
        scanf("%d",&arr[i]);
    }

    printf("\nARRAY IN REVERSE ORDER:\n");

    for(int j=size-1;j>=0;j--){

        printf("%d ",arr[j]);
    }

}
```