

EXPERIMENT NUMBER – 1.1

STUDENT'S NAME – NIKHIL

STUDENT'S UID – 20BET1042

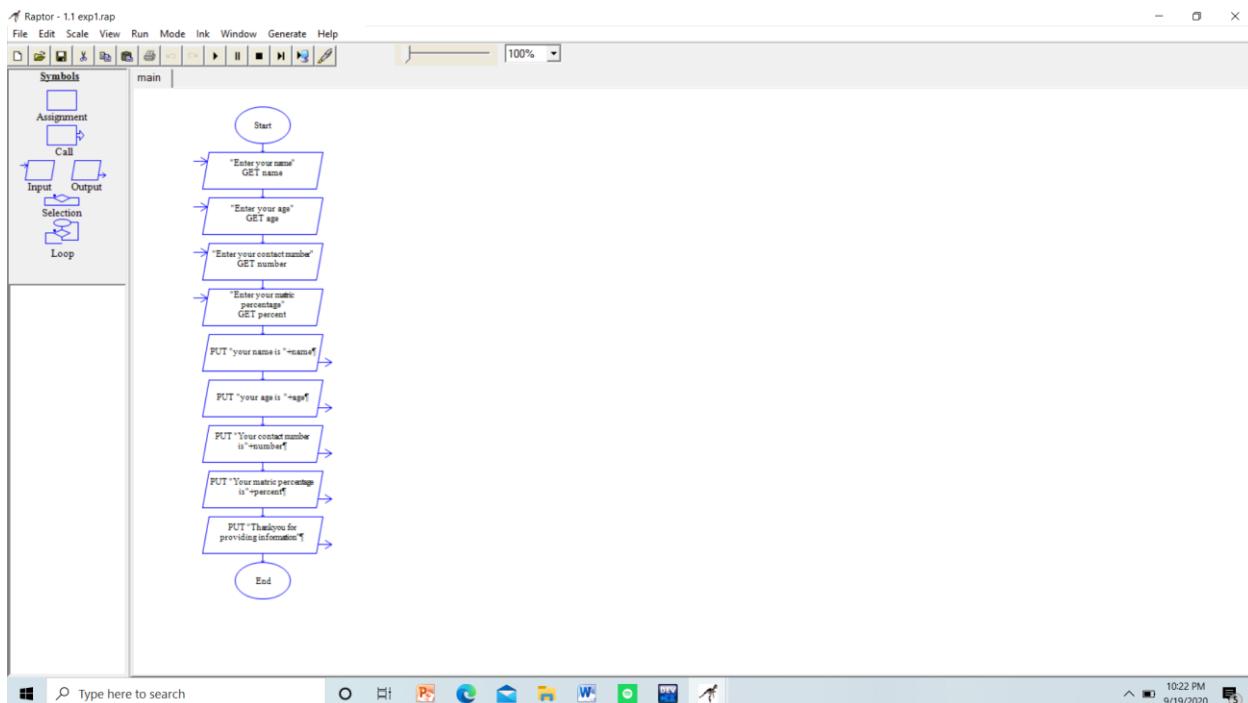
CLASS AND GROUP – BE IT

SEMESTER – 1ST

TOPIC OF EXPERIMENT – Write a program to input details of undergraduate student.

AIM OF THE EXPERIMENT - The course aim to provide exposure to problem solving with programming.

FLOWCHART/ ALGORITHM



Output:

```

MasterConsole
Font Font Size Edit Help
your name is Nikhil
your age is 17
Your contact number is 88547
Your matric percentage is 98
Thankyou for providing information
----Run complete. 11 symbols evaluated.----

```

PROGRAM CODE :

```

#include<stdio.h>
main()
{
    char name[20] ;//this string is use for words or sentences
    int age ;//integer is use for entering whole numbers
    unsigned long long int contactno ;//THIS DATA TYPE use for entering integers with more
range value
    float percentage ;//float are use to marks decimal no. upto 6 decimal digits

    printf ("Enter the name \n ",name);
    gets (name);

    printf ("Enter your age \n ",age);
    scanf ("%d",&age);

    printf ("Enter your contact_no \n ",contactno);
    scanf ("%llu",&contactno);

    printf ("Enter your matric class percentage \n ",percentage);
    scanf ("%f",&percentage);

    printf("your name is : %s",name);

    printf ("your age is %d \n ",age);
    printf ("your contact no. is %llu \n ",contactno);
    printf ("your matric percentage is %f \n ",percentage);
    printf ("thankyou for providing your info. \n ");

}

```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

No errors.

PROGRAMS' EXPLANATION (in brief)

In this program we will use following data type

char [20] ;//this string is use for words or sentences

int ;//integer is use for entering whole numbers

unsigned long long int ;//THIS DATA TYPE use for entering integers with more range value

float percentage //float are use to marks decimal no. upto 6 decimal digits

we also use gets so to make space between name and sname

The format specifier of these data types are

char[20] : %s

int : %d

unsigned long long int %llu

float : %f

we will use them according to the conditions provide to us i,e.

char[20] use for name

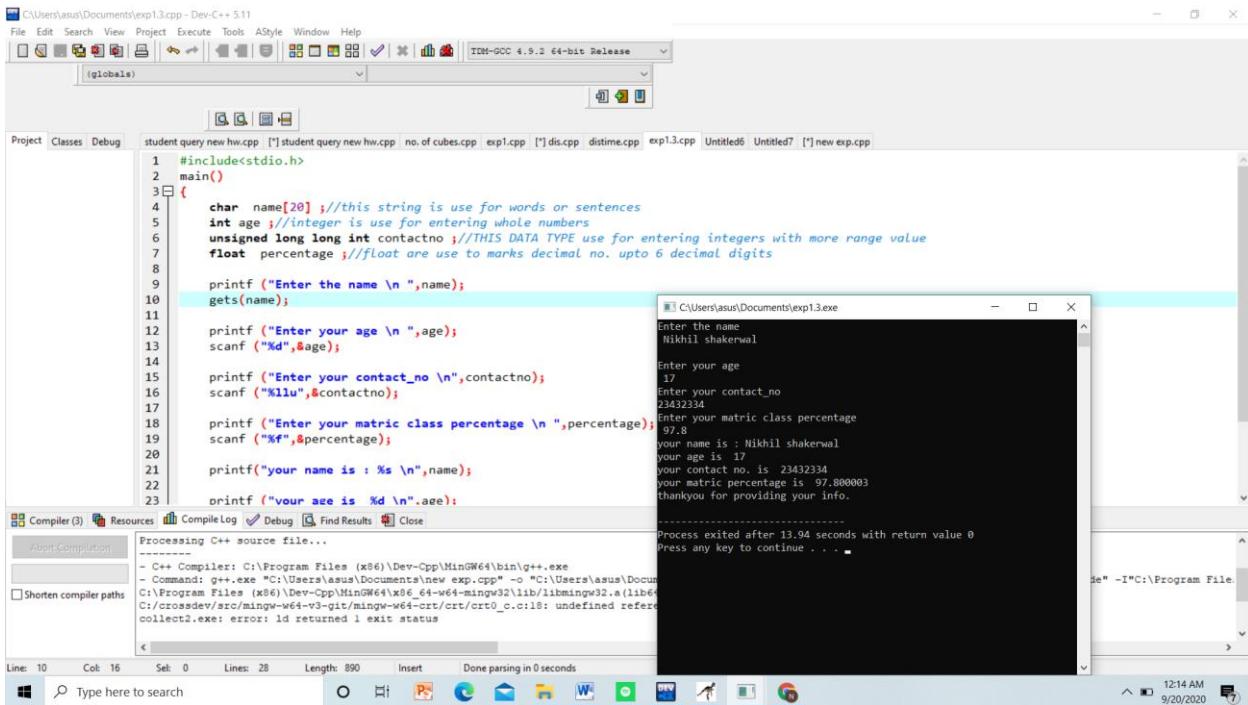
int use for age

unsigned long long int use for contact

float for percentage.

After defining variables with respective data type and using scanf and printf for input we will get our result.

OUTPUT:



The screenshot shows the Dev-C++ IDE interface. On the left, the code editor displays a C++ program named exp1.3.cpp. The code includes declarations for a character array `name` (for name), an integer `age` (for age), an unsigned long long integer `contactno` (for contact number), and a float `percentage` (for percentage). It uses `printf` and `scanf` for input and `gets` for reading the entire name string. The right side shows the terminal window where the program is run. The user enters their name, age, contact number, and percentage. The program then prints these details back to the user along with a thank you message. The status bar at the bottom indicates the file is a C++ source file and shows the current line and column numbers.

```

1 #include<stdio.h>
2 main()
3 {
4     char name[20] ;//this string is use for words or sentences
5     int age ;//integer is use for entering whole numbers
6     unsigned long long int contactno ;//THIS DATA TYPE use for entering integers with more range value
7     float percentage ;//float are use to marks decimal no. upto 6 decimal digits
8
9     printf ("Enter the name \n ",name);
10    gets(name);
11
12    printf ("Enter your age \n ",age);
13    scanf ("%d",&age);
14
15    printf ("Enter your contact_no \n ",contactno);
16    scanf ("%llu",&contactno);
17
18    printf ("Enter your matric class percentage \n ",percentage);
19    scanf ("%f",&percentage);
20
21    printf("your name is : %s \n",name);
22
23    printf ("your age is %d \n",age);

```

LEARNING OUTCOMES

- Identify situations where computational methods would be useful.
- Approach the programming tasks using techniques learnt and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task.

EVALUATION COLUMN (To be filled by concerned faculty only)

Sr. No.	Parameters	Maximum Marks	Marks Obtained
1.	Student's performance while executing the program in Computer Lab	12	
2.	Completion of worksheet with learning outcomes and program's output along with cleanliness and discipline.	10	
3.	Clarification of theoretical concepts	8	
4.	Total Marks	30	
5.	Teacher's Signature (with date)		

EXPERIMENT NUMBER – 1.2

STUDENT'S NAME – NIKHIL

STUDENT'S UID – 20BET1042

CLASS AND GROUP – BE IT

SEMESTER – 1ST

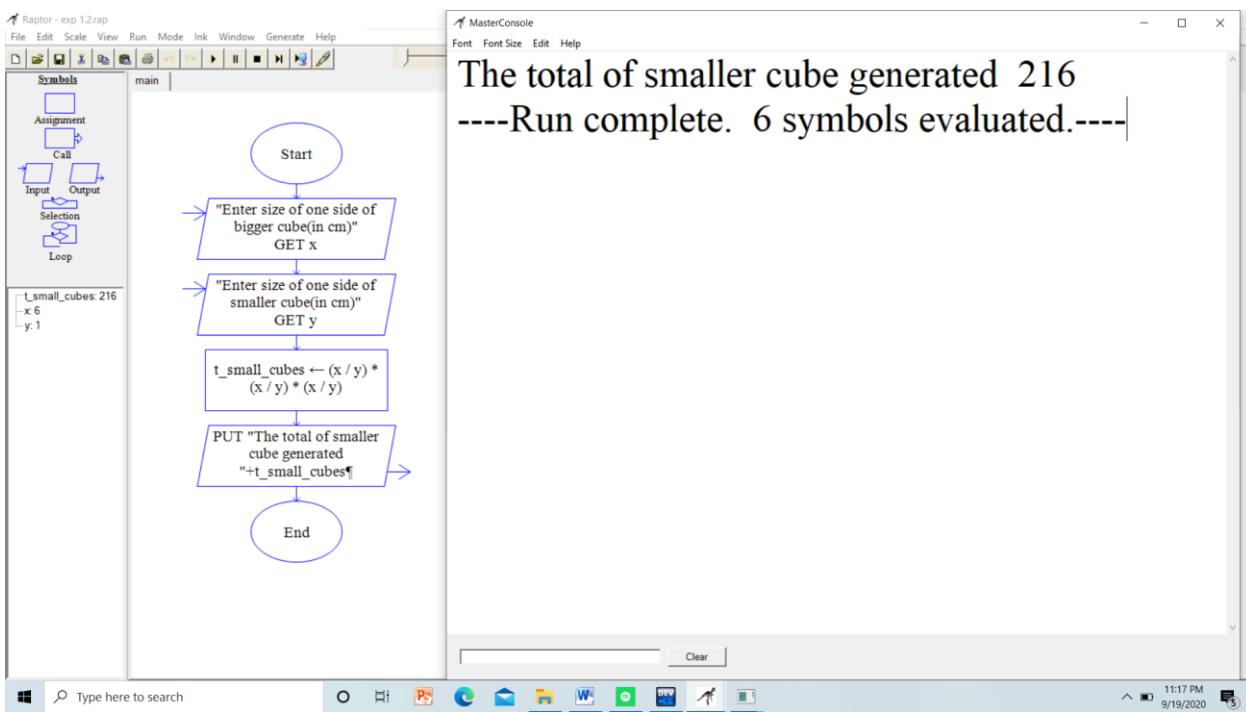
TOPIC OF EXPERIMENT –

A cube having a side of 6cm is painted red on all the faces and then cut into smaller cubes of 1cm each. Write program to find the total number of smaller cubes so obtained.

AIM OF THE EXPERIMENT –

The course aim to raise the programming skills of students via logic building capability

FLOWCHART/ ALGORITHM

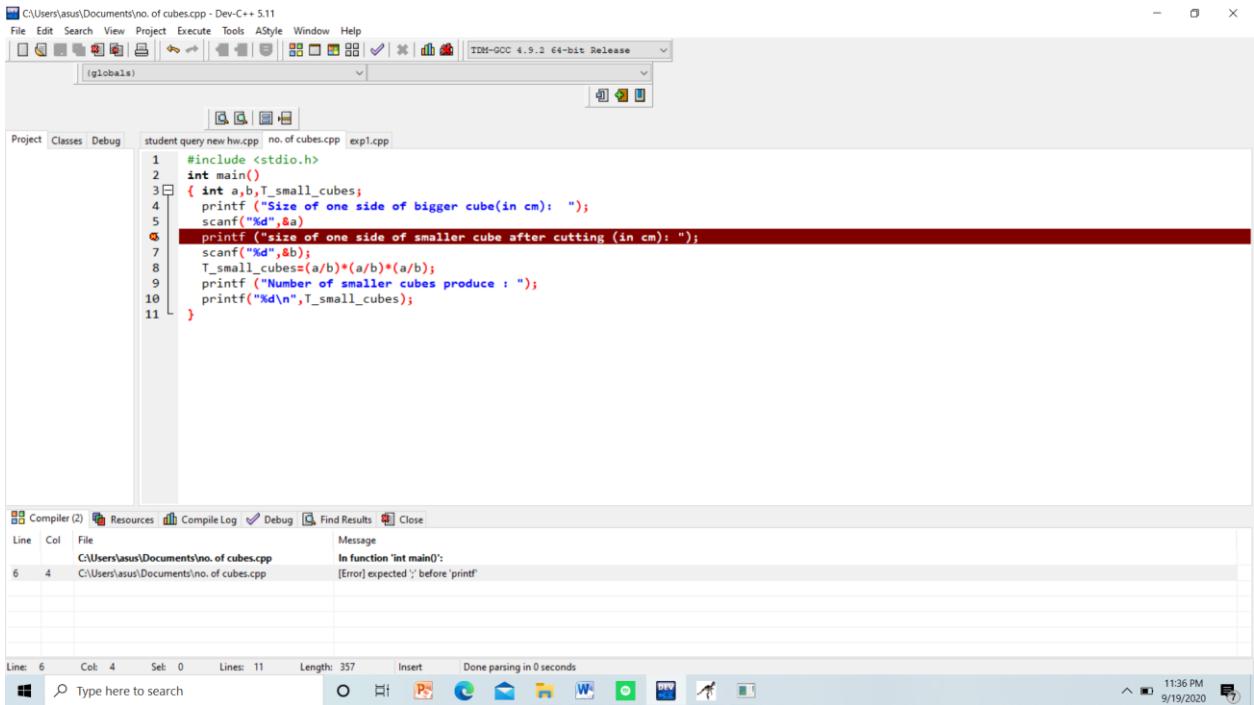


PROGRAM CODE

```
#include <stdio.h>
int main()
{ int a,b,T_small_cubes;
printf ("Size of one side of bigger cube(in cm): ");
scanf("%d",&a);
printf ("size of one side of smaller cube after cutting (in cm): ");
scanf("%d",&b);
T_small_cubes=(a/b)*(a/b)*(a/b);
printf ("Number of smaller cubes produce : ");
printf("%d\n",T_small_cubes);
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

At one place I forgot to use semicolon .



The screenshot shows the Dev-C++ IDE interface. The code editor window displays the following C program:

```
1 #include <stdio.h>
2 int main()
3 { int a,b,T_small_cubes;
4     printf ("Size of one side of bigger cube(in cm): ");
5     scanf("%d",a)
6     printf ("size of one side of smaller cube after cutting (in cm): ");
7     scanf("%d",b);
8     T_small_cubes=(a/b)*(a/b)*(a/b);
9     printf ("Number of smaller cubes produce : ");
10    printf("%d\n",T_small_cubes);
11 }
```

A red squiggly underline is under the line `scanf("%d",a)`, indicating a syntax error. The message "In function 'int main()': [error] expected ';' before 'printf'" is shown in the Compiler Log tab at the bottom of the IDE.

But after using semicolon it get fine.

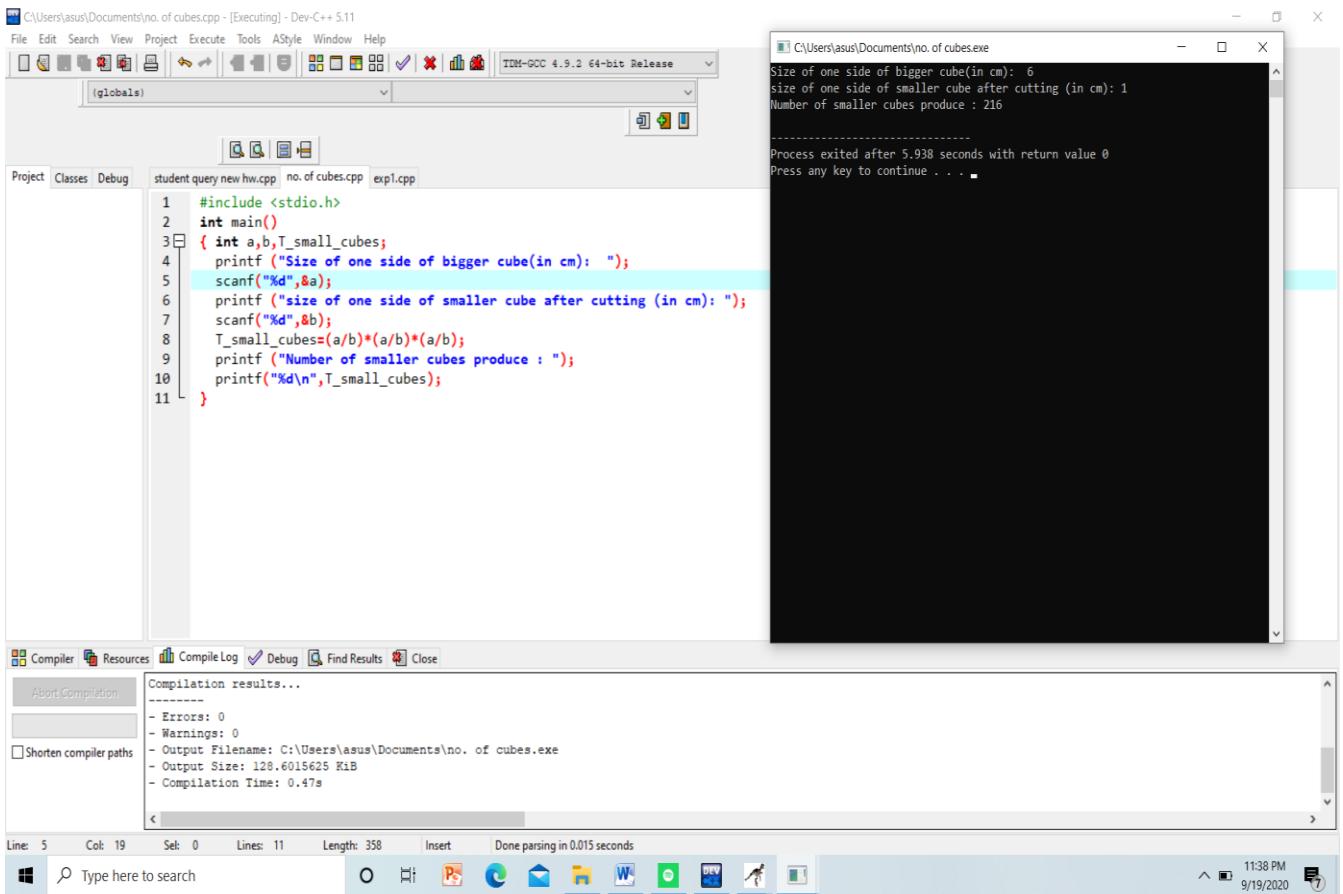
PROGRAMS' EXPLANATION (in brief)

In this program first we define variable x,y and T_small_cubes as size of one side larger and smaller cube and no. of cube generated.

%d formate specifier use because we are using integer value with no decimal require.

Using formula $(x/y)*(x/y)*(x/y)$ we will get our output

OUTPUT



The screenshot shows the Dev-C++ IDE interface. On the left, the code editor displays the following C++ code:

```

1 #include <stdio.h>
2 int main()
3 {
4     int a,b,T_small_cubes;
5     printf ("Size of one side of bigger cube(in cm): ");
6     scanf("%d",&a);
7     printf ("size of one side of smaller cube after cutting (in cm): ");
8     scanf("%d",&b);
9     T_small_cubes=(a/b)*(a/b)*(a/b);
10    printf ("Number of smaller cubes produce : ");
11    printf("%d\n",T_small_cubes);
}

```

To the right of the code editor is a terminal window showing the execution of the program. The terminal output is:

```

C:\Users\asus\Documents\no. of cubes.exe
Size of one side of bigger cube(in cm): 6
size of one side of smaller cube after cutting (in cm): 1
Number of smaller cubes produce : 216
-----
Process exited after 5.938 seconds with return value 0
Press any key to continue . . .

```

Below the terminal window is the Compiler Log window, which shows the compilation results:

```

Compilation results...
=====
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\asus\Documents\no. of cubes.exe
- Output Size: 128.6015625 Kib
- Compilation Time: 0.47s

```

LEARNING OUTCOMES

- Identify situations where computational methods would be useful.
- Approach the programming tasks using techniques learnt and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task.

EVALUATION COLUMN (To be filled by concerned faculty only)

Sr. No.	Parameters	Maximum Marks	Marks Obtained
1.	Student's performance while executing the program in Computer Lab	12	
2.	Completion of worksheet with learning outcomes and program's output along with cleanliness and discipline.	10	
3.	Clarification of theoretical concepts	8	
4.	Total Marks	30	
5.	Teacher's Signature (with date)		

EXPERIMENT NUMBER – 1.3

STUDENT'S NAME – Nikhil
STUDENT'S UID – 20BET1042
CLASS AND GROUP – BE IT
SEMESTER – 1ST

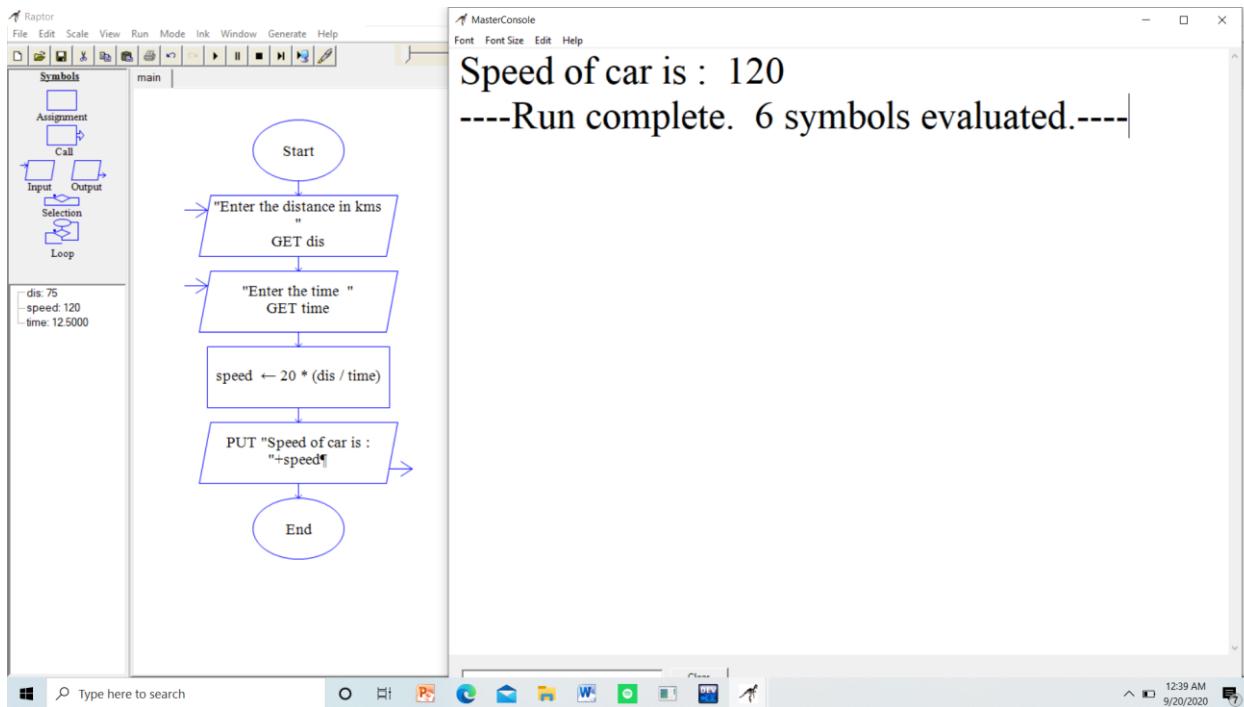
TOPIC OF EXPERIMENT –

A train can travel 50% faster than a car .Both start from point A at the same time and reach point B, 75 kilometers away from A at the same time. On the way, however, the train lost about 12.5 minutes while stopping at the stations. Write c program to compute the speed of car.

AIM OF THE EXPERIMENT –

With knowledge of C language students would be able to model real world problems

FLOWCHART/ ALGORITHM



PROGRAM CODE

```
#include<stdio.h>
int main()
{
    int speed,dis,time ;
    printf ("Enter distance in kms \n");
    scanf ("%d",&dis);
    printf ("Enter time \n");
    scanf ("%d",&time);
    speed=20*(dis/time);
    printf ("speed of car : %d \n ",speed);
    return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

No error

PROGRAMS' EXPLANATION (in brief)

If we let speed of car X so speed of train will be $x+0.5x$ which is $3x/2$

Time of car = dis/x that of train $2dis/3x$

Converting time diff to hours $time/60$

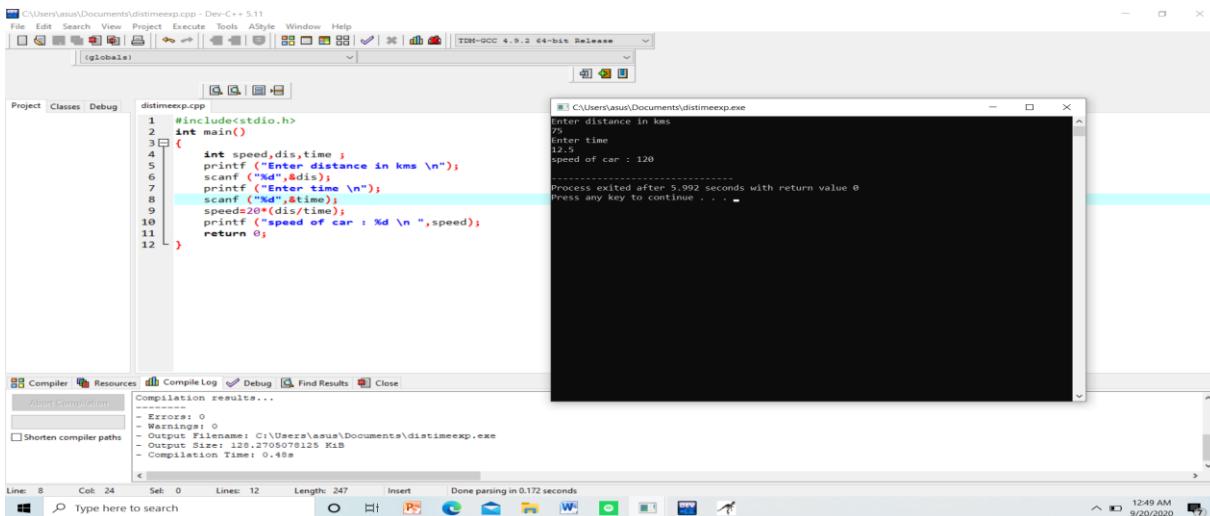
$Dis/x = 2dis/3x + time/60$

$Dis/3x = time/60$

$X=20*(dis/time)$

Now declaring variables and using above formula and use `%d` format specifier we will get output.

OUTPUT



The screenshot shows the Dev-C++ IDE interface. On the left, the code editor displays the C++ program. The code includes #include<stdio.h>, a main function with variable declarations (speed, dis, time), input/output operations using printf and scanf, and a calculation where speed is set to 20*(dis/time). On the right, a terminal window shows the execution of the program. It prompts for distance (75) and time (12.5), calculates speed (120), and then exits. Below the terminal is a 'Compiler' tab showing compilation results with 0 errors and 0 warnings, and providing details about the output file (C:\Users\asus\Documents\distimeexp.exe).

LEARNING OUTCOMES

- Identify situations where computational methods would be useful.
- Approach the programming tasks using techniques learnt and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task.

EVALUATION COLUMN (To be filled by concerned faculty only)

Sr. No.	Parameters	Maximum Marks	Marks Obtained
1.	Student's performance while executing the program in Computer Lab	12	
2.	Completion of worksheet with learning outcomes and program's output along with cleanliness and discipline.	10	
3.	Clarification of theoretical concepts	8	
4.	Total Marks	30	
5.	Teacher's Signature (with date)		

EXPERIMENT NUMBER – 1.4

STUDENT'S NAME – NIKHIL

STUDENT'S UID – 20BET1042

CLASS AND GROUP – BE IT

SEMESTER – 1ST

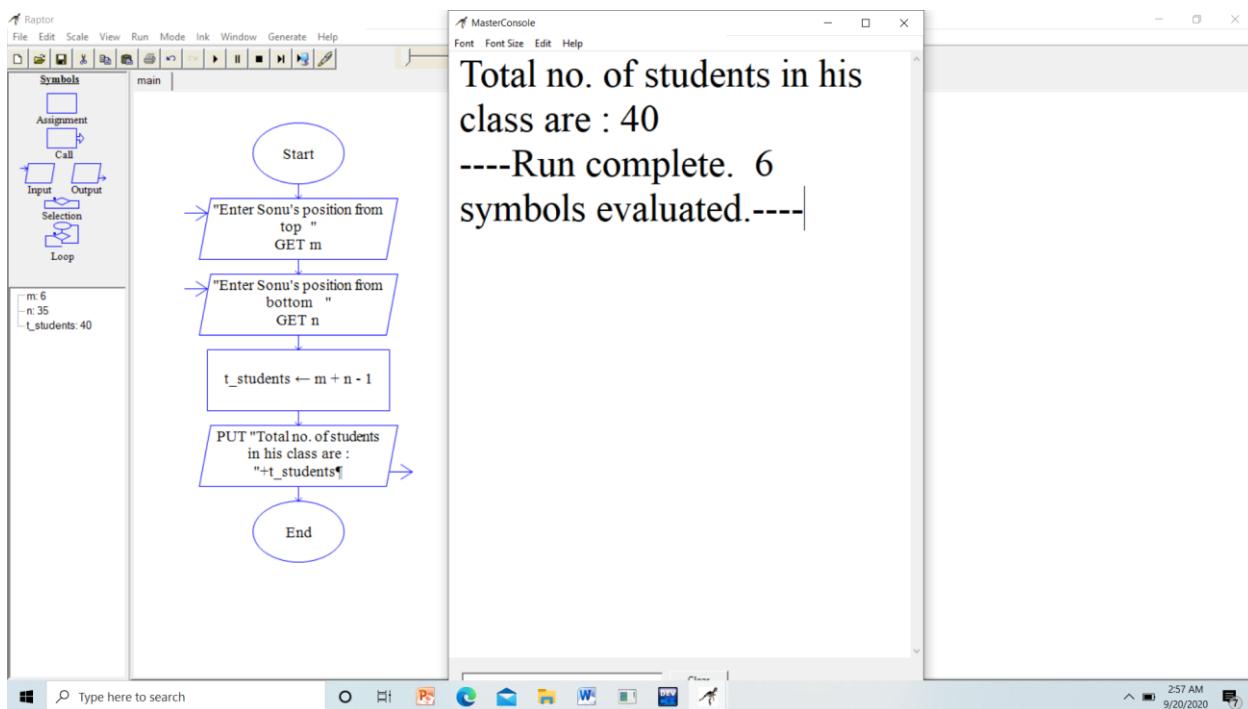
TOPIC OF EXPERIMENT –

Sonu ranked mth from the top and nth from the bottom in a class. How many students are there in the class.

AIM OF THE EXPERIMENT –

The course aim to raise the programming skills of students via logic building capability

FLOWCHART/ ALGORITHM



PROGRAM CODE

```
#include <stdio.h>
int main()
{ int m,n,T_students;
printf ("Sonu's position from top ");
scanf("%d",&m);
printf ("Sonu's position from bottom ");
scanf("%d",&n);
T_students=m+n-1;
printf ("Total students in class are : ");
printf("%d\n",T_students);
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

No

PROGRAMS' EXPLANATION (in brief)

In this program first we define variable m,n and T_students as Sonu's position from top ,bottom and total no. of students.

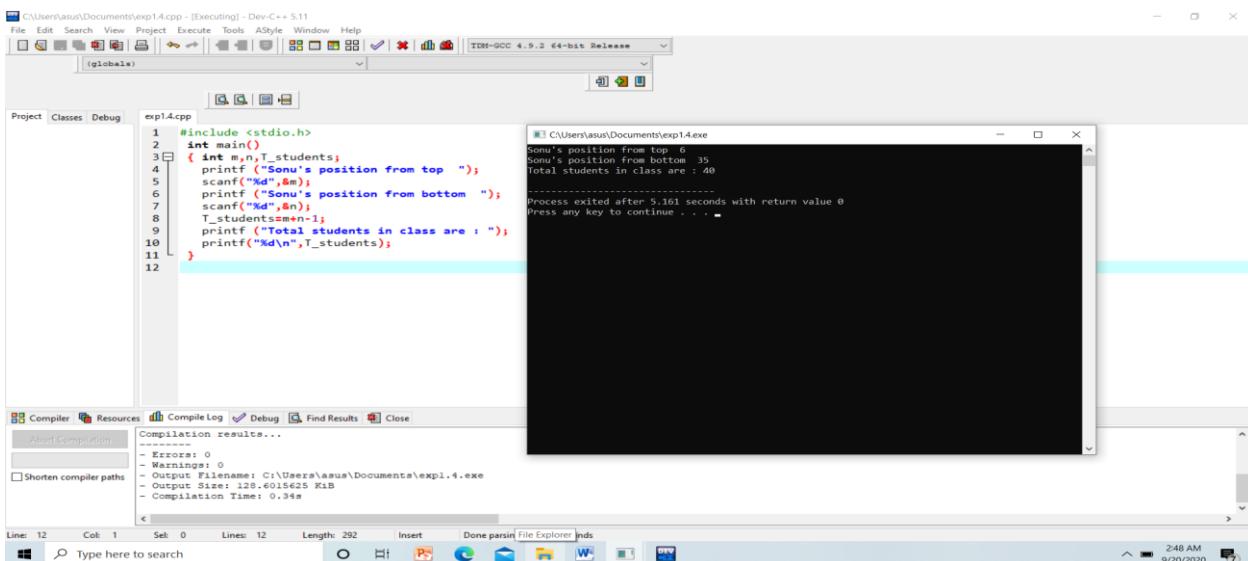
%d formate specifier use because we are using integer value with no decimal require.

Using formula m+n-1 we will get total no. of students.

Let sonu get 6th position from top and 35th from bottom then

Total no. of students in class are 6+35-1 that is 40

OUTPUT



The screenshot shows the Dev-C++ IDE interface. On the left, the code editor displays the C++ program. In the center, the terminal window shows the execution results. At the bottom, the compiler log window provides details about the compilation process.

Code Editor:

```
exp1.4.cpp
1 #include <stdio.h>
2 int main()
3 { int m,n,T_students;
4   printf ("Sonu's position from top ");
5   scanf("%d",&m);
6   printf ("Sonu's position from bottom ");
7   scanf("%d",&n);
8   T_students=m+n-1;
9   printf ("Total students in class are : ");
10  printf("%d\n",T_students);
11 }
```

Terminal Window:

```
Process started at 2020-09-20 24:48:11.160
C:\Users\asus\Documents\exp1.4.exe
Sonu's position from top 6
Sonu's position from bottom 35
Total students in class are : 40
Process exited after 5.161 seconds with return value 0
Press any key to continue . . .
```

Compiler Log:

```
Compiling exp1.4.cpp ...
No errors or warnings.
File: exp1.4.cpp
Line: 12 Col: 1 Sel: 0 Lines: 12 Length: 292 Insert Done parsing File Explorer Indxs
Type here to search
```

LEARNING OUTCOMES

- Identify situations where computational methods would be useful.
- Approach the programming tasks using techniques learnt and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task.

EVALUATION COLUMN (To be filled by concerned faculty only)

Sr. No.	Parameters	Maximum Marks	Marks Obtained
1.	Student's performance while executing the program in Computer Lab	12	
2.	Completion of worksheet with learning outcomes and program's output along with cleanliness and discipline.	10	
3.	Clarification of theoretical concepts	8	
4.	Total Marks	30	
5.	Teacher's Signature (with date)		

EXPERIMENT NUMBER – 1.5

STUDENT'S NAME – NIKHIL

STUDENT'S UID – 20BET1042

CLASS AND GROUP – BE IT

SEMESTER – 1ST

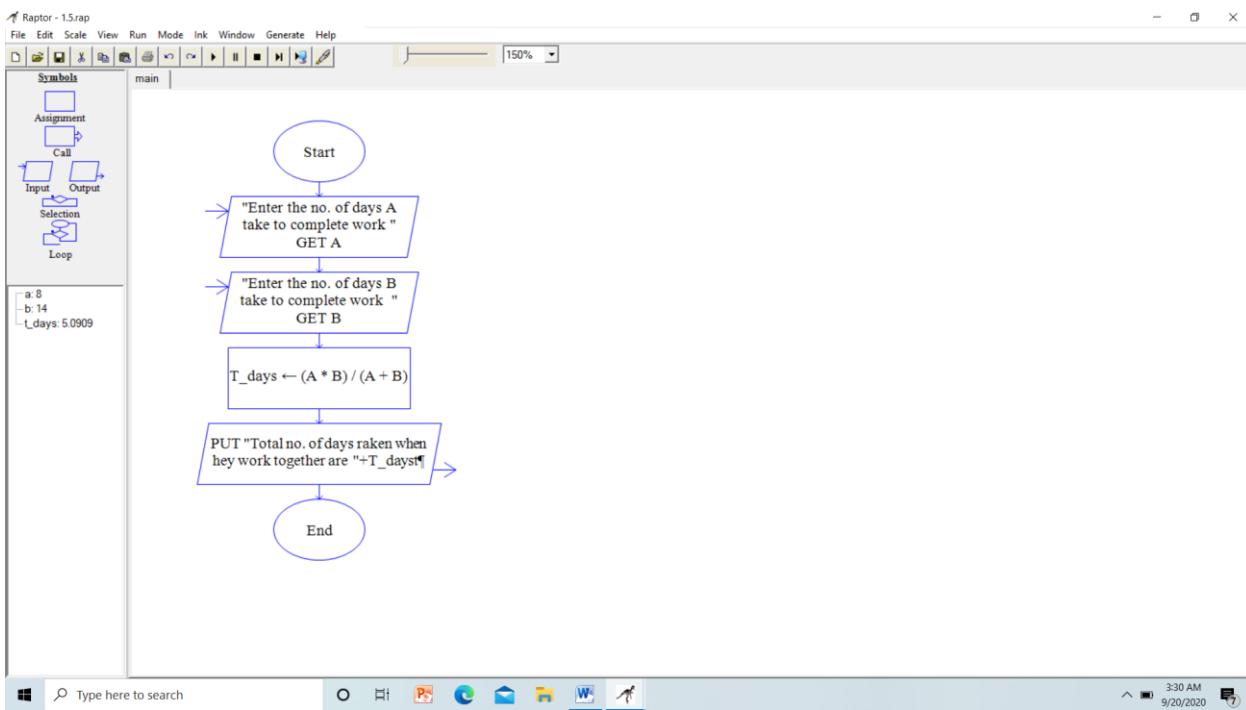
TOPIC OF EXPERIMENT –

A can do piece of work in 8 days. B can do the same work in 14 days. Write a program to calculate and print the number of days to be taken to complete the work if they work together

AIM OF THE EXPERIMENT –

The course aim to raise the programming skills of students via logic building capability

FLOWCHART/ ALGORITHM

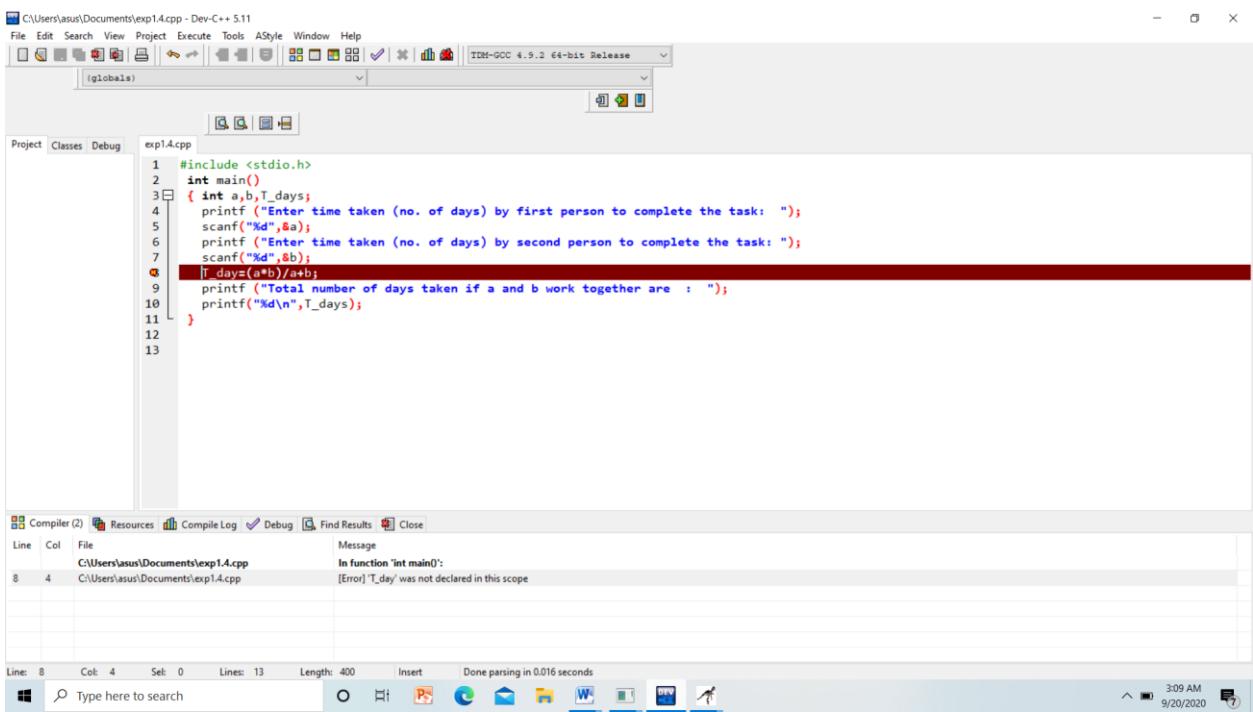


PROGRAM CODE

```
#include <stdio.h>
int main()
{ int a,b,T_days;
printf ("Enter time taken (no. of days) by first person to complete the task: ");
scanf("%d",&a);
printf ("Enter time taken (no. of days) by second person to complete the task: ");
scanf("%d",&b);
T_days=(a*b)/(a+b);
printf ("Total number of days taken if a and b work together are : ");
printf("%d\n",T_days);
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

By mistake I wrote T_day instead of T_days so variable was not declared and it cause error AS shown below



The screenshot shows the Dev-C++ IDE interface. The code editor window displays the file 'exp1.4.cpp' with the following content:

```
1 #include <stdio.h>
2 int main()
3 { int a,b,T_day;
4   printf ("Enter time taken (no. of days) by first person to complete the task: ");
5   scanf("%d",&a);
6   printf ("Enter time taken (no. of days) by second person to complete the task: ");
7   scanf("%d",&b);
8   T_day=(a*b)/a+b;
9   printf ("Total number of days taken if a and b work together are : ");
10  printf("%d\n",T_day);
11 }
12
13
```

The line 'T_day=(a*b)/a+b;' is highlighted in red, indicating a syntax error. The status bar at the bottom of the IDE shows the message 'Done parsing in 0.016 seconds'.

The 'Compiler Log' tab in the bottom left shows the following error message:

```
Line Col File Message
8 4 C:\Users\asus\Documents\exp1.4.cpp In function 'int main()':
C:\Users\asus\Documents\exp1.4.cpp [Error] 'T_day' was not declared in this scope
```

But after writing T_days it get fine.

PROGRAMS' EXPLANATION (in brief)

In this program first we define variable a,b as persons and T_days as total days taken

%d formate specifier use because we are using integer value with no decimal require.

Now A take 8 days to complete work

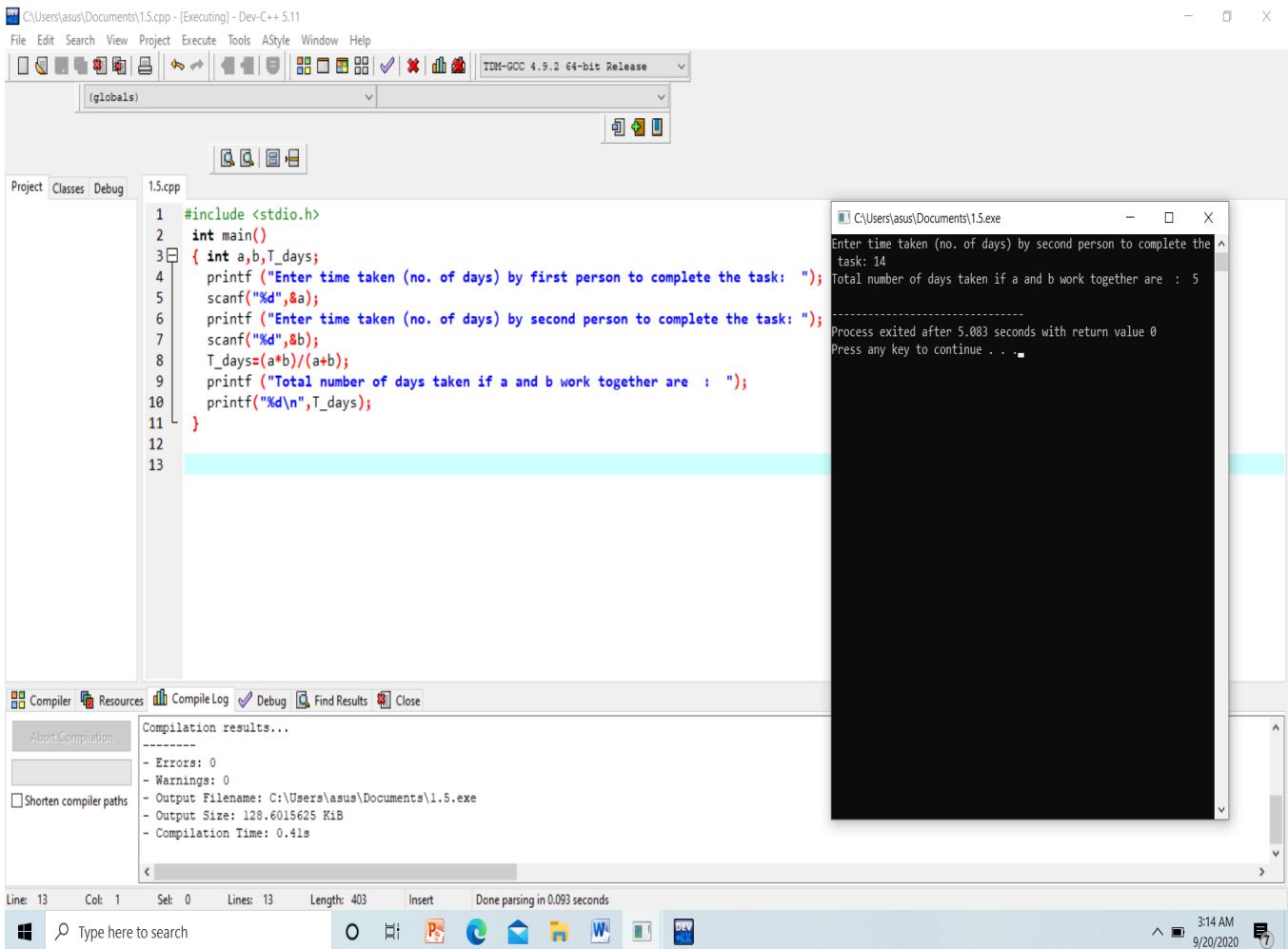
1 day of work=1/8

B takes 14 days so 1 day of work =1/14

A+B together= $1/8 + 1/14 = (14*8)/(14+8)$

Using this expression we can get our output which will be in integer form because we use %d

OUTPUT



The screenshot shows the Dev-C++ IDE interface with the following details:

- Project Tab:** Shows the file "1.5.cpp" selected.
- Code Editor:** Displays the following C++ code:

```

1 #include <stdio.h>
2 int main()
3 {
4     int a,b,T_days;
5     printf ("Enter time taken (no. of days) by first person to complete the task: ");
6     scanf ("%d",&a);
7     printf ("Enter time taken (no. of days) by second person to complete the task: ");
8     scanf ("%d",&b);
9     T_days=(a*b)/(a+b);
10    printf ("Total number of days taken if a and b work together are : ");
11    printf ("%d\n",T_days);
12 }
13

```
- Output Window:** Shows the execution results:

```

C:\Users\asus\Documents\1.5.exe
Enter time taken (no. of days) by second person to complete the task: 14
Total number of days taken if a and b work together are : 5
Process exited after 5.083 seconds with return value 0
Press any key to continue . . .

```
- Compiler Log:** Shows compilation results:

```

Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\asus\Documents\1.5.exe
- Output Size: 128.6015625 Kib
- Compilation Time: 0.41s

```

LEARNING OUTCOMES

- Identify situations where computational methods would be useful.
- Approach the programming tasks using techniques learnt and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task.

EVALUATION COLUMN (To be filled by concerned faculty only)

Sr. No.	Parameters	Maximum Marks	Marks Obtained
1.	Student's performance while executing the program in Computer Lab	12	
2.	Completion of worksheet with learning outcomes and program's output along with cleanliness and discipline.	10	
3.	Clarification of theoretical concepts	8	
4.	Total Marks	30	
5.	Teacher's Signature (with date)		