

“Heaven’s Light is Our Guide”



**Department of Computer Science & Engineering
RAJSHAHI UNIVERSITY OF ENGINEERING & TECHNOLOGY**

Lab Report

<p>Name of the Instructor Barshon Sen Sir Assistant Professor Department of Computer Science & Engineering, RUET</p>
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Student's Information

Name:Khandoker Sefayet Alam
Roll:2003121
Department:Computer Science & Engineering
Section-C
Session:2020-21
Course code:CSE 1102
Date of Submission:11-07-2022

Lab No. - 01

Problem 1.1: Write a program that displays your name, roll no. & department (each information in a new line).

Sample Output:

```
NAME: James Bond
Roll no.: 643007
Department: Crime & Investigation
```

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor window titled "CSE_1102_1.c" contains the following C code:

```
Start here X CSE_1102_1.c X
1 #include<stdio.h>
2 #define ll long long
3
4 int main()
5 {
6     printf("NAME:Khandoker Sefayet Alam\n");
7     printf("Roll no:2003121\n");
8     printf("Department:Computer Science & Engineering");
9
10    return 0;
11
12 }
13
```

To the right of the code editor is the terminal window showing the execution results:

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
NAME:Khandoker Sefayet Alam
Roll no:2003121
Department:Computer Science & Engineering
Process returned 0 (0x0)   execution time : 0.036 s
Press any key to continue.
```

At the bottom of the interface, the "Logs & others" tab is visible, showing the build log:

```
File L.. Message
==== Build file: "no target" in "no project" ...
==== Build finished: 0 error(s), 0 warning(s) ...
```

Problem 1.2: Write a program that generates the following output:
(N.B.: No need to use any loop)

```
*  
* *  
* * *  
* * * *  
* * * * *
```

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor window displays a C program named "CSE_1102_1.c". The code consists of 15 lines, including a header inclusion, a macro definition, and a main function that prints five lines of asterisks. On the right, the terminal window shows the execution of the program, displaying the required output pattern. Below the terminal, the build log window shows a successful build process.

```
Start here X CSE_1102_1.c X
1 #include<stdio.h>
2 #define ll long long
3
4 int main()
5 {
6
7     printf("      *\n");
8     printf("    * *\n");
9     printf("   * * *\n");
10    printf("  * * * *\n");
11    printf(" * * * * *\n");
12
13    return 0;
14
15 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

```
*
```

```
      *
    * *
   * * *
  * * * *
 * * * * *
```

Process returned 0 (0x0) execution time : 0.032 s
Press any key to continue.

Logs & others

File L.. Message
==== Build file: "no target" in "no project" (...
==== Build finished: 0 error(s), 0 warning(s) ...

Problem 1.3: Write a program that converts dollar into taka.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for a dollar amount, calculates its equivalent in taka (using a conversion rate of 93.68), and prints the result. On the right, the terminal window shows the execution of the program, where the user enters '21' as the dollar amount, and the program outputs 'The amount of taka: 1967.280000'. Below the terminal is the build log, which shows a successful build with no errors or warnings.

```
#include<stdio.h>
#define ll long long
//Name:Khandoker Sefayet Alam
//roll:2003121
//section:C,CSE
int main()
{
    double dollar,taka;
    printf("Enter the amount of dollar :");
    scanf("%lf",&dollar);
    taka=dollar*93.68;
    //1 dollar=93.68 taka currently
    printf("The amount of taka: %lf",taka,dollar);

    return 0;
}
```

```
"D:\rueet\RUET academics\semester 1-1\rueet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe"
Enter the amount of dollar :21
The amount of taka: 1967.280000
Process returned 0 (0x0)   execution time : 1.517 s
Press any key to continue.
```

Logs & others

File L.. Message
==== Build file: "no target" in "no project" (...
==== Build finished: 0 error(s), 0 warning(s) ...

semics\semester 1-1\rueet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 14, Col 35, Pos 314 Insert Read/Write default

Problem 1.4: Write a program that converts a given number of days into months and days. [Assume, 1 month = 30 days]

Solution:

The screenshot shows the Code::Blocks IDE interface. The top window displays the source code for 'CSE_1102_1.c'. The code reads a number of days from the user, calculates the equivalent number of months by dividing by 30, and then prints both the months and days. The bottom window shows the terminal output of the compiled executable, which is a simple console application. The logs & others tab at the bottom shows build messages indicating a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #define ll long long
3
4 //Name:Khandoker Sefayet Alam
5 //roll:2003121
6 //section:C,CSE
7 int main()
8 {
9     int days,months;
10    printf("Enter the number of days:");
11    scanf("%d",&days);
12    months=days/30;
13    days=days%30;
14    printf("The number of months:%d months\n",months);
15    printf("The number of days:%d days",days);
16
17
18 }
19
```

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
Enter the number of days:76
The number of months:2 months
The number of days:16 days
Process returned 0 (0x0)   execution time : 1.221 s
Press any key to continue.
```

Logs & others

```
File L.. Message
      == Build file: "no target" in "no project" (...
      == Build finished: 0 error(s), 0 warning(s) ...
```

Problem 1.5: Write a program that reads the base & the height of a triangle and display its area.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code prompts the user for the base and height of a triangle, calculates the area using the formula $\text{area} = 0.5 * \text{base} * \text{height}$, and prints the result. On the right, the terminal window shows the execution of the program, including the input values (base 16, height 15), the calculated area (120), and the command-line interface details.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #define ll long long
3
4 //Name:Khandoker Sefayet Alam
5 //roll:2003121
6 //section:C,CSE
7 int main()
8 {
9     int base,height,area;
10    printf("Enter the base of the triangle:");
11    scanf("%d",&base);
12    printf("Enter the height of the triangle:");
13    scanf("%d",&height);
14    area=(0.5)*base*height;
15    printf("The area of the triangle is:%d",area);
16    return 0;
17 }
18
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
Enter the base of the triangle:16
Enter the height of the triangle:15
The area of the triangle is:120
Process returned 0 (0x0) execution time : 2.020 s
Press any key to continue.

Logs & others
Code::Blocks x Search results x Cccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ messages x Cscope x Debugger x Doxygen x
File L... Message
File L... Message
==== Build file: "no target" in "no project" (...
==== Build finished: 0 error(s), 0 warning(s) ...
mics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 15, Col 43, Pos 368 Insert Read/Wi

Problem 1.6: Write a program that reads temperature in Celcius and displays in Fahrenheit.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor window titled "Start here" contains the following C program:

```
Start here X CSE_1102_1.c X
1 #include<stdio.h>
2 #define ll long long
3
4 //Name:Khandoker Sefayet Alam
5 //roll:2003121
6 //section:C,CSE
7 int main()
8 {
9     double celcius,farenheit;
10    printf("Enter the temperature in celcius:");
11    scanf("%lf",&celcius);
12    farenheit=(9*celcius)/5+32;
13    printf("The temperature in farenheit is:%lf",farenheit);
14    return 0;
15 }
16
```

To the right of the code editor is the terminal window showing the execution results:

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
Enter the temperature in celcius:22
The temperature in farenheit is:71.600000
Process returned 0 (0x0)   execution time : 1.048 s
Press any key to continue.
```

At the bottom, the "Logs & others" tab is open, showing the build log:

```
Logs & others
Code::Blocks X Search results X Cccc X Build log X
File  L.. Message
      === Build file: "no target" in "no project" (...
      === Build finished: 0 error(s), 0 warning(s) ...
```

Problem 1.7: Write a program that accepts two different values in variable a & b and interchanges their values.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code defines two integers 'a' and 'b', prompts the user to enter two numbers, swaps their values using a temporary variable 'temp', and then prints the swapped values. The code is as follows:

```
1 #include<stdio.h>
2 #define ll long long
3
4 //Name:Khandoker Sefayet Alam
5 //roll:2003121
6 //section:C,CSE
7 int main()
8 {
9     int a,b;
10    printf("Enter two numbers: ");
11    scanf("%d %d", &a, &b);
12    int temp=a;
13    a=b;
14    b=temp;
15
16    printf("The values after swaping are:%d %d",a,b);
17    return 0;
18 }
19
20
```

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

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
Enter two numbers: 10 25
The values after swaping are:25 10
Process returned 0 (0x0)   execution time : 2.447 s
Press any key to continue.
```

Below the terminal window, the 'Logs & others' tab is selected, showing build logs. The build log indicates:

```
File L.. Message
    == Build file: "no target" in "no project" (...)
    == Build finished: 0 error(s), 0 warning(s) ...
```

The status bar at the bottom of the IDE shows the file path 'demics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c', the compiler 'C/C++', the encoding 'Windows (CR+LF)', the character set 'WINDOWS-1252', the current line 'Line 17, Col 53, Pos 289', and other standard status indicators.

Lab No. - 2

Problem 2.1: Write a program that reads the length & the width of a rectangle and displays its perimeter & area.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code prompts the user for length and width, calculates the perimeter and area, and prints them out. On the right, the terminal window shows the execution of the program, inputting 25 for length and 50 for width, resulting in an area of 1250 and a perimeter of 150. Below the terminal is the build log, which shows a successful build with no errors or warnings.

```
Start here X CSE_1102_1.c X
1 #include<stdio.h>
2 #define ll long long
3
4 //Name:Khandoker Sefayet Alam
5 //roll:2003121
6 //section:C,CSE
7 int main()
8 {
9     int length,width,perimeter,area;
10    printf("Enter the length:");
11    scanf("%d",&length);
12    printf("Enter the width:");
13    scanf("%d",&width);
14    perimeter=2*(length+width);
15    area=length*width;
16
17    printf("The area of the rectangle is: %d \n",area);
18    printf("The perimeter is: %d\n",perimeter);
19
20
21
22
23 }
24
```

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe"
Enter the length:25
Enter the width:50
The area of the rectangle is: 1250
The perimeter is: 150
Process returned 0 (0x0)  execution time : 1.713 s
Press any key to continue.
```

Logs & others

Code:Blocks X Search results X Cccc X Build log X Build message

File L.. Message

==== Build file: "no target" in "no project" (...

==== Build finished: 0 error(s), 0 warning(s) ...

lemics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 18, Col 45, Pos 378 Insert Read/Write del

Problem 2.2: Write a program that accepts two different integer values in variable x & y and displays their quotient in decimal, floating point and remainder.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code includes #include<stdio.h>, defines ll long long, and contains a main() function that prompts for x and y, calculates remainder, integer quotient, and floating-point quotient, and then prints them. The terminal window shows the execution of the program with input x=50 and y=3, resulting in a remainder of 2, an integer quotient of 16, and a floating-point quotient of 16.66666. The build log window shows a successful build with no errors or warnings.

```
#include<stdio.h>
#define ll long long
//Name:Khandoker Sefayet Alam
//roll:2003121
//section:C,CSE
int main()
{
    int x,y,remainder,quotient;
    float ans;
    printf("Enter x:");
    scanf(" %d",&x);
    printf("Enter y:");
    scanf(" %d",&y);
    remainder=x%y;
    quotient=x/y;
    ans=(float)x/y;

    printf("The remainder is: %d \n",remainder);
    printf("The quotient in int is: %d\n",quotient);
    printf("The quotient in float is: %f\n",ans);

    return 0;
}
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

Enter x:50
Enter y:3
The remainder is: 2
The quotient in int is: 16
The quotient in float is: 16.66666

Process returned 0 (0x0) execution time : 3.622 s
Press any key to continue.

Logs & others

Code::Blocks X Search results X Ccc X Build log X Build messages X CppCheck/Vera++ X CppCheck/Vera++ messages X Cscope X Debugger X Doxygen X Fortran info

File L.. Message
==== Build file: "no target" in "no project" (...
==== Build finished: 0 error(s), 0 warning(s) ...

academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 24, Col 47, Pos 472 Insert Read/Write default

Problem 2.3: Write a program that converts a given number of seconds into hours, minutes & seconds.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code prompts the user for a number of seconds, calculates the equivalent hours, minutes, and seconds, and then prints the result. The terminal window shows the execution of the program, entering 7445 as input and receiving output showing 2 hours, 4 minutes, and 5 seconds. The build log window at the bottom shows a successful build with no errors or warnings.

```
Start here X CSE_1102_1.c X
1 #include<stdio.h>
2 #define ll long long
3
4 //Name:Khandoker Sefayet Alam
5 //roll:2003121
6 //section:C,CSE
7 int main()
8 {
9     int seconds,hour,minutes;
10    printf("Enter the amount of seconds:");
11    scanf("%d",&seconds);
12    hour=seconds/3600;
13    seconds=seconds%3600;
14    minutes=seconds/60;
15    seconds=seconds%60;
16    printf("hour:minute:second= %d : %d : %d",hour,minutes,seconds);
17
18
19
20
21
22 }
```

```
"D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe"
Enter the amount of seconds:7445
hour:minute:second= 2 : 4 : 5
Process returned 0 (0x0)  execution time : 2.405 s
Press any key to continue.
```

Logs & others

```
File L.. Message
    == Build file: "no target" in "no project" ...
    == Build finished: 0 error(s), 0 warning(s) ...
```

mics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c

Problem 2.4: Write a program that displays the coordinate distance of two points.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code includes standard headers, defines a long long type, and contains a main function that prompts for coordinates of two points and calculates their Euclidean distance. On the right, the terminal window shows the execution of the program, including command-line arguments, user input, and the output of the calculated distance. Below the terminal is the build log, which shows a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alan
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int x1,y1,x2,y2;
12     float dist;
13     printf("Enter the vertices of the starting point:");
14     scanf("%d %d", &x1, &y1);
15     printf("Enter the vertices of the end point:");
16     scanf("%d %d", &x2, &y2);
17     dist=sqrt((x1-x2)*(x1-x2)+(y1-y2)*(y1-y2));
18
19     printf("%f",dist);
20
21     return 0;
22 }
23
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
Enter the vertices of the starting point:5 5
Enter the vertices of the end point:1 3
4.472136
Process returned 0 (0x0) execution time : 3.532 s
Press any key to continue.

Logs & others
Code:Blocks x Search results x Cccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ messages x Cscope x Debugger x DoxyBlocks x Fortran info
File L.. Message
Build file: "no target" in "no project" ...
Build finished: 0 error(s), 0 warning(s) ...

Problem 2.5: Write a program that accepts a number and reverse the digit of the given number.

Sample Input:	Sample Output:
1234	4 3 2 1

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named 'CSE_1102_1.c'. The code reads a number from the user, initializes a variable 'num' to the input, and then enters a loop where it repeatedly divides 'num' by 10 and prints the remainder (the last digit) until 'num' becomes zero. The output window shows the input '1234' and the reversed output '4 3 2 1'. The logs & others panel at the bottom shows build messages indicating no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int n;
11
12     printf("Enter the number:");
13
14     scanf("%d", &n);
15     int num;
16     printf("output:\n");
17     while(n>0){
18         num=n%10;
19         printf("%d ",num);
20         n/=10;
21     }
22     return 0;
23 }
24
25
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

Enter the number:1234

output:

4 3 2 1

Process returned 0 (0x0) execution time : 1.406 s

Press any key to continue.

Logs & others

Code::Blocks x Search results x Cccc x

File L.. Message

--- Build file: "no target" in "no project" --- Build finished: 0 error(s), 0 warning(s)

Problem 2.6: Write a program that accepts a number and display the summation of the digit of the given number.

Sample Input:	Sample Output:
1234	Summation=1+2+3+4=10

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code reads a number from the user, initializes a sum to 0, and then iterates through the digits of the number, adding each digit to the sum. Finally, it prints the sum. The code includes comments for authorship and roll number. The terminal window shows the execution of the program, where it prompts for a number (1234), calculates the summation (1+2+3+4=10), and displays the result. The logs & others tab at the bottom shows build information.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int n;
11
12     printf("Enter the number:");
13     scanf("%d", &n);
14
15     int num;
16     ll sum=0;
17
18     printf("summation= ");
19     int p=1000;
20     while(n>9) {
21         num=n/p;
22         printf("%d+", num);
23         sum+=num;
24         n=n%p;
25         p/=10;
26
27     }
28     num=n/p;
29     printf("%d", num);
30     sum+=num;
31     printf("%d", sum);
32     return 0;
33 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

```
Enter the number:1234
summation= 1+2+3+4=10
Process returned 0 (0x0)   execution time : 1.471 s
Press any key to continue.
```

Logs & others

```
Code::Blocks x Search results x Cccc x
File L... Message
==== Build file: "no target" in "no project" (...
==== Build finished: 0 error(s), 0 warning(s) ...
```

Problem 2.7: Write a program that accepts four integer numbers and display the standard deviation (SD) of the given numbers.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code includes #include directives for stdio.h and math.h, a #define for long long, and a main function that prompts for four integers, calculates their mean and standard deviation, and prints the result. The output window shows the execution of the program, entering four numbers (10, 11, 13, 15) and displaying a standard deviation of 1.920286. The logs & others tab at the bottom shows build messages indicating no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int a,b,c,d,i;
12     float stddev;
13     printf ("Enter four numbers:");
14     scanf ("%d %d %d %d",&a,&b,&c,&d);
15
16     float mean=(float) (a+b+c+d) /4;
17     float sum=(a-mean)*(a-mean)+(b-mean)*(b-mean)+(c-mean)*(c-mean)+(d-mean)*(d-mean);
18     stddev=sqrt(sum/4);
19     printf("standard deviation is: %f",stddev);
20     return 0;
21 }
22
```

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
Enter four numbers:10 11 13 15
standard deviation is: 1.920286
Process returned 0 (0x0)   execution time : 2.689 s
Press any key to continue.
```

Logs & others

Code:Blocks x Search results x Cccc x Build log x Build

File L.. Message
==== Build file: "no target" in "no project" (...
==== Build finished: 0 error(s), 0 warning(s) ...)

Lab No. - 3

Problem 3.1: Write a program that will read two numbers and display the minimum using conditional operator.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code reads two integers from the user, compares them using an if-else conditional operator, and prints the minimum value. The code is as follows:

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int a,b;
11     printf("Enter two numbers:");
12
13     scanf("%d %d",&a,&b);
14     if(a<b) (printf("the minimum number is: %d",a));
15     else (printf("the minimum number is: %d",b));
16 }
17
18 }
```

The output window shows the execution of the program. It prompts the user to enter two numbers (99 100), then displays the minimum value (99). The logs & others window shows build messages indicating no errors.

Logs & others

File L.. Message
==== Build file: "no target"
==== Build finished: 0 errors

Problem 3.2: Write a program that will read four numbers and display the maximum.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays the code for 'CSE_1102_1.c'. The code reads four integers from the user, initializes two variables 'max1' and 'max2' to the first two values, and then iterates through the remaining two values to determine the maximum. The output window shows the program's execution and the result. The build log window at the bottom shows the build process and results.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int a,b,c,d;
11     printf("Enter four numbers:");
12
13     scanf("%d %d %d %d",&a,&b,&c,&d);
14     int max1,max2;
15     if(a>b) {max1=a;}
16     else max1=b;
17
18     if(c>d) {max2=c;}
19     else {max2=d;}
20
21     if(max1>max2){printf("The maximum number is: %d",max1);}
22     else{printf("The maximum number is: %d",max2);}
23 }
24
25
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

```
Enter four numbers:101 50 51 200
The maximum number is: 200
Process returned 0 (0x0)   execution time : 6.609 s
Press any key to continue.
```

Logs & others

Code::Blocks x Search results x Cccc x Build log

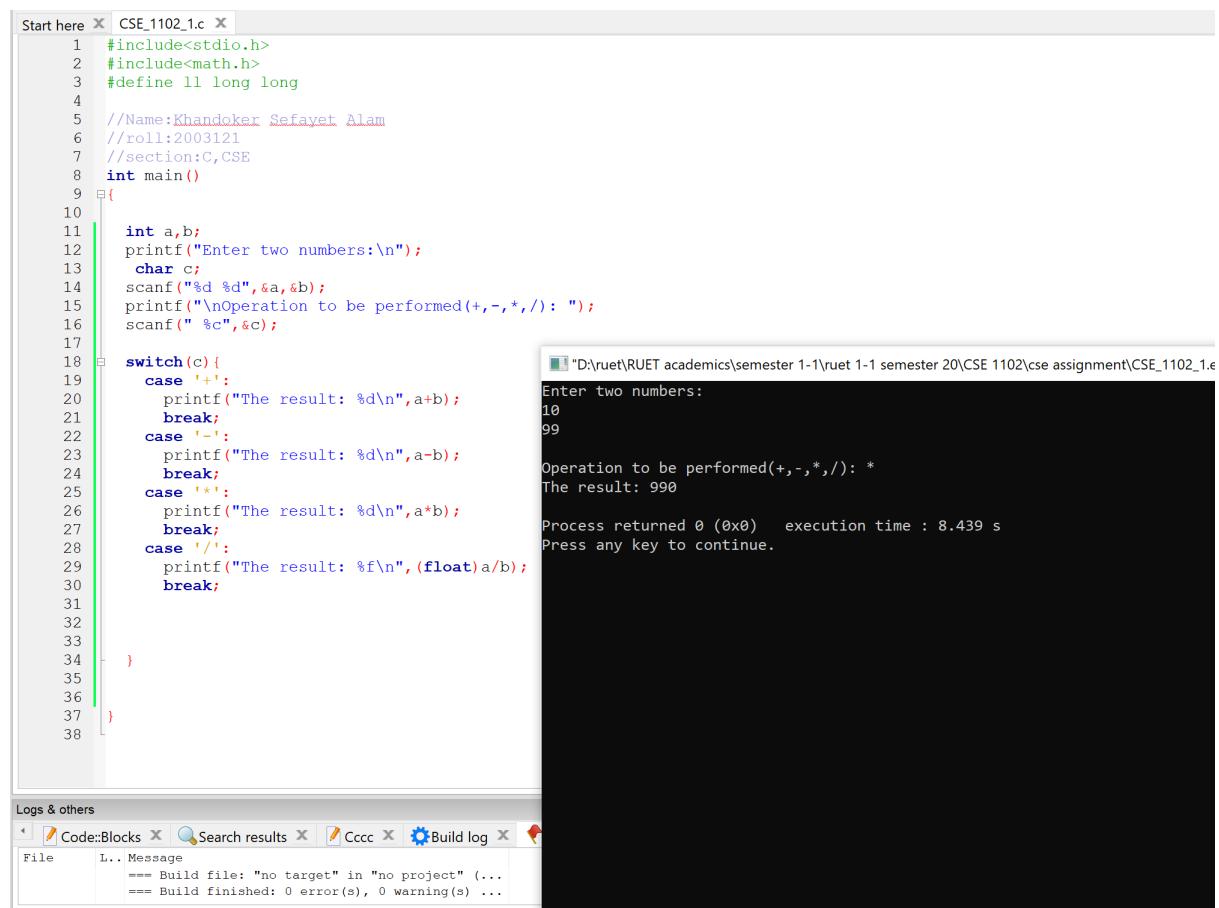
File L.. Message

```
==> Build file: "no target" in "no project" (.
==> Build finished: 0 error(s), 0 warning(s) .
```

Problem 3.3: Write a program that will read two numbers and perform addition (+) / subtraction (-) / multiplication (*) / division (/) operation between them using switch statement.

<p>Sample Input: Enter two numbers: 10 99</p> <p>Operation to be performed(+,-,*,/): *</p> <p>Sample Output: The result = 990</p>	<p>Sample Input: Enter two numbers: 10 9</p> <p>Operation to be performed (+,-,*,/): +</p> <p>Sample Output: The Result = 19</p>
---	--

Solution:



The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code includes comments for Name (Khandoker Sefayet Alam), Roll Number (2003121), and Section (C, CSE). It defines long long integers for variables a and b. The main function prompts for two numbers, reads them, asks for an operation, and then performs the selected operation using a switch statement. The operations supported are addition (+), subtraction (-), multiplication (*), and division (/). The result is then printed. On the right, the terminal window shows the execution of the program. It asks for two numbers (10 and 99), asks for an operation (*), and prints the result (990). The terminal also shows the build log at the bottom, indicating a successful build with no errors or warnings.

```

Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int a,b;
12     printf("Enter two numbers:\n");
13     char c;
14     scanf("%d %d",&a,&b);
15     printf("\nOperation to be performed(+,-,*,/): ");
16     scanf(" %c",&c);
17
18     switch(c)
19     {
20         case '+':
21             printf("The result: %d\n",a+b);
22             break;
23         case '-':
24             printf("The result: %d\n",a-b);
25             break;
26         case '*':
27             printf("The result: %d\n",a*b);
28             break;
29         case '/':
30             printf("The result: %f\n", (float)a/b);
31             break;
32
33     }
34
35
36
37 }
38

```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c

Enter two numbers:
10
99

Operation to be performed(+,-,*,/): *

The result: 990

Process returned 0 (0x0) execution time : 8.439 s

Press any key to continue.

Logs & others

Code::Blocks x Search results x Cccc x Build log x

File L.. Message
==== Build file: "no target" in "no project" (...
==== Build finished: 0 error(s), 0 warning(s) ...

Problem 3.4: Write a program that will accept a number and check whether it is divisible by 5 or not.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code prompts the user to enter a number, reads it, and then checks if it is divisible by 5 using an if-else conditional statement. The output window shows the execution of the program, where the user enters the number 99, and the program correctly outputs that it is not divisible by 5. The logs & others window at the bottom shows build messages indicating no errors.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int n;
11     printf("Enter a number:");
12     scanf("%d", &n);
13
14     if(n%5==0) printf("The number is divisible by 5.");
15     else{
16         printf("The number is not divisible by 5.");
17     }
18
19 }
20
21 return 0;
22
23 }
```

D:\rueet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

Enter a number:99
The number is not divisible by 5.
Process returned 0 (0x0) execution time : 1.202 s
Press any key to continue.

Logs & others

Code::Blocks x Search results x Ccc

File L.. Message
==== Build file: "no target" in
==== Build finished: 0 error(s)

Problem 3.5: Write a program that will accept a digit from user and display by spelling.

Sample Input:

Enter a digit: 0

Sample Output:

Spelling: Zero

Sample Input:

Enter a digit: 7

Sample Output:

Spelling: Seven

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for a digit, reads it using scanf, and then uses a switch statement to print the corresponding spelling ('Zero' through 'Nine'). On the right, the terminal window shows the execution of the program. It asks for a digit, receives '9', prints 'Spelling: Nine', and then exits. Below the terminal is the build log, which shows a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int n;
12     printf("Enter a digit: ");
13     scanf("%d",&n);
14
15     switch(n)
16     {
17         case 0:
18             printf("\nSpelling: Zero");
19             break;
20         case 1:
21             printf("\nSpelling: One");
22             break;
23         case 2:
24             printf("\nSpelling: Two");
25             break;
26         case 3:
27             printf("\nSpelling: Three");
28             break;
29         case 4:
30             printf("\nSpelling: Four");
31             break;
32         case 5:
33             printf("\nSpelling: Five");
34             break;
35         case 6:
36             printf("\nSpelling: Six");
37             break;
38         case 7:
39             printf("\nSpelling: Seven");
40             break;
41         case 8:
42             printf("\nSpelling: Eight");
43             break;
44         case 9:
45             printf("\nSpelling: Nine");
46             break;
47     default:
48         printf("\nEnter a valid digit.");
49     }
50
51 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe"

```
Enter a digit: 9
Spelling: Nine
Process returned 0 (0x0)   execution time : 1.551 s
Press any key to continue.
```

Logs & others

File L.. Message
== Build file: "no target" in "no project" (...
== Build finished: 0 error(s), 0 warning(s) ...

Problem 3.6: Write a program that will take a character from the user and determine whatever the character is a vowel / consonant / digit / space / special character.

Solution:

The screenshot shows a C IDE interface with two main panes. The left pane displays the source code for 'CSE_1102_1.c'. The right pane shows the terminal window where the program is run and its output is displayed.

```
Start here X CSE_1102_1.c X
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:CSE
8 int main()
9 {
10
11     char c;
12     printf("Enter a character:");
13     scanf("%c",&c);
14
15     switch(c) {
16         case '0'...'9':
17             printf("The character is a digit.");
18             break;
19         case 'a'...'z':
20             switch (c) {
21                 case 'a':
22                 case 'e':
23                 case 'i':
24                 case 'o':
25                 case 'u':
26                     printf("\nThe character is a vowel.");
27                     break;
28                 default: printf("\nThe character is a constant.");
29             }
30             break;
31
32         case 'A'...'Z':
33             switch (c) {
34                 case 'A':
35                 case 'E':
36                 case 'I':
37                 case 'O':
38                 case 'U':
39                     printf("\nThe character is a vowel.");
40                     break;
41                 default:
42                     printf("\nThe character is a constant.");
43             }
44             break;
45         case ' ':
46             printf("\nThe character is a space.");
47             break;
48         default:
49             printf("The character is a special character.");
50
51     }
52
53     return 0;
54 }
```

Terminal Output:

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CS
Enter a character:
The character is a special character.
Process returned 0 (0x0)   execution time : 16.150 s
Press any key to continue.
```

Logs & others

```
Code::Blocks X Search results X Cccc X Build log X Build messages X CppCheck/Vera++ X CppCheck/Vera++ messages X Csc
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ====

```

Lab No. - 4

Problem-4.1: Write a program from the following:

Sample Input:

How many \$: 6

Sample Output:

\$ - \$ - \$ - \$ - \$ - \$

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code prompts the user for an integer input and then prints a string of six dollar signs. The terminal window shows the execution of the program, where it asks for input ("How many \$:"), receives "6", and then outputs "\$-\$-\$-\$-\$". The build log at the bottom indicates a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int n,i;
12     printf("How many $:");
13     scanf("%d", &n);
14     printf("output:\n");
15     for(i=1;i<n;i++){
16         printf("$-");
17     }
18     printf("$");
19
20     return 0;
21
22 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

How many \$:6
output:
\$-\$-\$-\$-\$

Process returned 0 (0x0) execution time : 1.344 s
Press any key to continue.

Logs & others

Code::Blocks x Search results x Ccc

File L.. Message
==== Build file: "no target" in
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 4.2: Write a program from the following:

1->4->7->10-> upto N.

Sample Input:

N=15

Sample Output:

1->4->7->10->13->.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code includes comments for the author's name, roll number, and section. It defines a function 'main' that reads an integer 'n' from the user, prints a header, and then uses a while loop to print numbers starting from 1 up to 'n' in increments of 3, separated by arrows. The output window on the right shows the program's execution. It prompts for input 'N=15', displays the output '1->4->7->10->13->.', and shows the process returned 0 with an execution time of 1.644 seconds. The logs & others tab at the bottom shows a build log indicating no errors or warnings.

```
#include<stdio.h>
#include<math.h>
#define ll long long
//Name:Khandoker Sefayet Alam
//roll:2003121
//section:C,CSE
int main()
{
    int n, i=1;
    printf("N=");
    scanf("%d", &n);
    printf("output:\n");
    while(i<=n) {
        printf("%d->", i);
        i+=3;
    }
    printf(".");
    return 0;
}
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c
N=15
output:
1->4->7->10->13->.
Process returned 0 (0x0) execution time : 1.644 s
Press any key to continue.

Logs & others
File L.. Message
== Build file: "no target" in "no project" (compiler: unknown) ==
== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ==

Problem - 4.3: Write a program from the following:

1->2->4->8->16-> upto N.

Sample Input:
N=10

Sample Output:
1->2->4->8->.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code reads an integer N from the user and then prints the sequence of powers of 2 from 1 up to N. The code is as follows:

```
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int n, i=1;
11     printf ("N=");
12     scanf ("%d", &n);
13     printf ("output:\n");
14     while(i<=n){
15         printf ("%d->", i);
16         i*=2;
17     }
18     printf (".");
19
20     return 0;
21
22 }
23
24 }
```

To the right of the code editor, the terminal window shows the execution of the program. It prompts for N (input 10), then outputs the sequence 1->2->4->8->. The terminal also displays the path to the project directory and some build information at the bottom.

Logs & others

File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 4.4: Write a program from the following:

Sample Input:

N=5

Sample Output:

5->4->3->2->1.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code reads an integer 'N' (set to 5) and prints a sequence of numbers from 5 down to 1, separated by arrows. The code is as follows:

```
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int n,i=1;
11     printf("N=");
12     scanf("%d", &n);
13     printf("output:\n");
14     while(n>1){
15         printf("%d->", n);
16         n--;
17     }
18     printf("%d.", n);
19
20     return 0;
21
22 }
23
24 }
```

On the right, the terminal window shows the execution of the program. It prompts for 'N' (input 5), displays the output '5->4->3->2->1.', and shows the process details and execution time. At the bottom, the logs and messages window shows a successful build with no errors or warnings.

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\c
N=5
output:
5->4->3->2->1.
Process returned 0 (0x0) execution time : 0.520 s
Press any key to continue.

Logs & others

File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 4.5: Write a program that prints the summation of 1st N positive integers.

Sample Input:

N=5

Sample Output:

1+2+3+4+5=15

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code prompts the user for an integer N and then calculates the sum of integers from 1 to N using a while loop. The output window shows the program's execution and the result for N=5. The logs & others tab at the bottom shows build messages indicating a successful build.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int n,i=1;
11     ll sum=0;
12     printf("N=");
13     scanf("%d",&n);
14     printf("Output:\n");
15     while(i<n){
16         printf("%d+",i);
17         sum+=i;
18         i++;
19     }
20     printf("%d=",i);
21     sum+=i;
22     printf("%lld.",sum);
23
24     return 0;
25
26
27
28
29 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

```
N=5
output:
1+2+3+4+5=15.
Process returned 0 (0x0)   execution time : 0.798 s
Press any key to continue.
```

Logs & others

File L.. Message
== Build file: "no target" in "no project" (compiler: unknown) ===
== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 4.6: Write a program that prints the summation of all even positive integers upto N.

Sample Input:

N=10

Sample Output:

2+4+6+8+10=30

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code reads an integer N from the user, initializes a sum to 0, and then uses a while loop to iterate from 2 to N, adding even numbers to the sum. Finally, it prints the total sum. On the right, the terminal window shows the output for N=10, which is 2+4+6+8+10=30. Below the terminal, the build logs show a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int n, i=2;
12     ll sum=0;
13     printf("N=");
14     scanf("%d", &n);
15     printf("output:\n");
16     while(i<n) {
17         printf("%d+", i);
18         sum+=i;
19         i+=2;
20
21     }
22     printf("%d=", i);
23     sum+=i;
24     printf("%lld.", sum);
25
26     return 0;
27
28 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c

```
N=10
output:
2+4+6+8+10=30.
Process returned 0 (0x0)   execution time : 0.983 s
Press any key to continue.
```

Logs & others

Code::Blocks x Search results x Cccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ m

File	L.. Message
	==== Build file: "no target" in "no project" (compiler: unknown) ===
	==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 4.7: Write a program from the following:

Enter two numbers: 5 7

Sum=12

Again ? → Y

Enter two numbers: 3 4

Sum=7

Again ? → N

Thank You

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code includes comments for authorship and roll number, and defines a function main() that prompts for two integers, calculates their sum, and asks if the user wants to perform another calculation. The right side shows the terminal window where the program is run, displaying the expected input and output. Below the terminal, the build logs show a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     char c;
12     int a,b;
13     printf ("Enter two numbers: ");
14     scanf ("%d %d",&a,&b);
15     printf ("sum=%d\n",a+b);
16     printf ("Again->");
17     scanf (" %c",&c);
18     while(c=='Y' || c=='y') {
19         printf ("\nEnter two numbers: ");
20         scanf ("%d %d",&a,&b);
21         printf ("sum=%d",a+b);
22         printf ("\nAgain->");
23         scanf (" %c",&c);
24     }
25     printf (" Thank you.");
26
27
28
29
30 }
```

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```
Enter two numbers: 5 7
sum=12
Again->Y

Enter two numbers: 3 4
sum=7
Again->N
    Thank you.
Process returned 0 (0x0)   execution time : 6.969 s
Press any key to continue.
```

Logs & others

File L.. Message

```
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===
```

Problem - 4.8: Write a program from the following:

<u>Sample Input:</u>	<u>Sample Output:</u>
How many numbers? 4 Enter 4 numbers: 5 7 3 2	Sum=17

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for four integers and calculates their sum. On the right, the terminal window shows the execution of the program, including the input values and the output sum. At the bottom, the build log shows a successful compilation.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int n;
12     printf ("How many numbers?: ");
13     scanf ("%d", &n);
14     ll sum=0;
15     printf ("Enter %d numbers:\n", n);
16     int x;
17     while(n--) {
18         scanf ("%d", &x);
19         sum+=x;
20
21     }
22     printf ("output:\n");
23     printf ("Sum= %lld", sum);
24
25
26     return 0;
27
28 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c

```
How many numbers?: 4
Enter 4 numbers:
5 7 3 2
output:
Sum= 17
Process returned 0 (0x0)   execution time : 3.805 s
Press any key to continue.
```

Logs & others

File L.. Message
==== Build file: "no target" in "no project" (compiling)
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 4.9: Write a program that prints the summation of all the odd integers between N1 & N2.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays the code for 'CSE_1102_1.c'. The code includes comments for Name: Khandoker Sefayet Alam, Roll: 2003121, and Section: C, CSE. It defines a long long integer type and uses standard input/output headers. The program prompts the user for two integers, n1 and n2. If n1 is greater than n2, it swaps them. It then initializes a sum to 0 and iterates through odd numbers from n1 to n2, adding each to the sum. Finally, it prints the output and the sum. The terminal window shows the execution of the program with inputs 12 and 22, resulting in a sum of 85. The build log at the bottom indicates a successful build with no errors or warnings.

```
Start here CSE_1102_1.c
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C, CSE
8 int main()
9 {
10     int n1,n2;
11     printf("Enter N1 & N2: ");
12     scanf ("%d %d",&n1,&n2);
13     if(n1>n2) {
14         int temp=n1;
15         n1=n2;
16         n2=temp;
17     }
18     ll sum=0;
19     if(n1%2==0) n1++;
20     while(n1<=n2) {
21         sum+=n1;
22         n1+=2;
23     }
24
25
26     printf ("output:\n");
27     printf ("Sum= %lld",sum);
28
29
30     return 0;
31
32 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.ex

```
Enter N1 & N2: 12 22
output:
Sum= 85
Process returned 0 (0x0)   execution time : 1.762 s
Press any key to continue.
```

Logs & others

Code::Blocks Search results Cccc Build log Build messages CppCheck/Vera++ CppCheck/Vera++ messages Csco

File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Lab No. -05

Problem - 5.1: Write a program that find the factorial of an integer.

Sample Input:

The number = 5

Sample Output:

1*2*3*4*5 = 120

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for a number, initializes a variable 'ans' to 1, and then uses a while loop to calculate the factorial by multiplying 'ans' by each integer from 1 to the input number. On the right, the terminal window shows the execution of the program. It asks for the number, receives '5', and then prints the output '1*2*3*4*5=120'. Below the terminal, the build logs show a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int n;
11     printf("The Number= ");
12     scanf("%d", &n);
13     int i=1;
14     ll ans=1;
15     printf("Output:\n");
16     while(i<n) {
17         printf("%d*", i);
18         ans*=i;
19         i++;
20     }
21     printf("%d=", i);
22     ans*=i;
23     printf("%lld", ans);
24     return 0;
25
26
27 }
28
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\C
The Number= 5
Output:
1*2*3*4*5=120
Process returned 0 (0x0) execution time : 1.308 s
Press any key to continue.

Logs & others
Code::Blocks x Search results x Ccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ mes
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 5.2: Write a program from the following:

Sample Input and Output:

5

Case 1: 5

17

Case 2: 17

-12

Case 3: -12

0

Case 4: End.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code reads integers from the user and prints them along with their case number. The right side shows the terminal window where the program is run, displaying the sample input and output. At the bottom, the build log shows a successful build with no errors or warnings.

```
#include<stdio.h>
#include<math.h>
#define ll long long
//Name:Khandoker Sefayet Alam
//roll:2003121
//section:C,CSE
int main()
{
    int n;
    int i=1;
    scanf ("%d", &n);
    while(n!=0) {
        printf ("Case %d: %d\n", i, n);
        i++;
        scanf ("%d", &n);
    }
    printf ("Case %d: End\n", i++);
    return 0;
}
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assig

```
5
Case 1: 5
17
Case 2: 17
-12
Case 3: -12
0
Case 4: End

Process returned 0 (0x0)   execution time : 28.132 s
Press any key to continue.
```

Logs & others

File L.. Message

```
== Build file: "no target" in "no project" (compiler: unknown) ===
== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===
```

Problem - 5.3: Write a program that prints the summation and the minimum of N numbers.

Sample Input:

How many numbers? : 4
Enter the 4 numbers:
10 17 13 5

Sample Output:

Summation = 45
Minimum = 5

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code prompts the user for the number of integers (4) and then reads four integers (10, 17, 13, 5) to calculate their sum (45) and minimum (5). On the right, the terminal window shows the execution results: "How many numbers?: 4", "Enter 4 numbers:", "10 17 13 5", "Sum= 45", and "Minimum= 5". Below the terminal, the logs & others tab shows build messages indicating no target or project was specified.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int n, i, num;
12     printf("How many numbers?: ");
13     scanf("%d", &n);
14     printf("Enter %d numbers:\n", n);
15     ll sum=0;
16     int minm=le15;;
17     while(n--){
18         scanf("%d", &num);
19         sum+=num;
20         if(num<minm) minm=num;
21     }
22     printf("Sum= %lld\nMinimum= %d\n", sum, minm);
23     return 0;
24 }
25
```

D:\rueet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102

```
How many numbers?: 4
Enter 4 numbers:
10 17 13 5
Sum= 45
Minimum= 5
Process returned 0 (0x0)   execution time : 4.885 s
Press any key to continue.
```

Logs & others

File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
D:\rue... In function 'main':

Problem - 5.4: Write a program that will take the value of N1 & N2 from the users and determine the summation of all integers between N1 & N2 which are divisible by 5.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for two integers, swaps them if necessary, and then calculates the sum of all integers between them that are divisible by 5. The right side shows the terminal window where the program is run with inputs 11 and 26, resulting in a sum of 60. Below the terminal is the build log window, which shows a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10     int n1,n2;
11     printf("Enter n1 and n2: ");
12     scanf("%d %d",&n1,&n2);
13     if(n1>n2){
14         int temp=n1;
15         n1=n2;
16         n2=temp;
17     }
18     ll sum=0;
19     if(n1%5) n1+=5-(n1%5);
20     while(n1<=n2){
21         sum+=n1;
22         n1+=5;
23     }
24     printf("\nSum= %lld",sum);
25     return 0;
26 }
27
28
```

D:\rueet\RUET academics\semester 1-1\rueet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
Enter n1 and n2: 11 26
Sum= 60
Process returned 0 (0x0) execution time : 3.701 s
Press any key to continue.

Logs & others

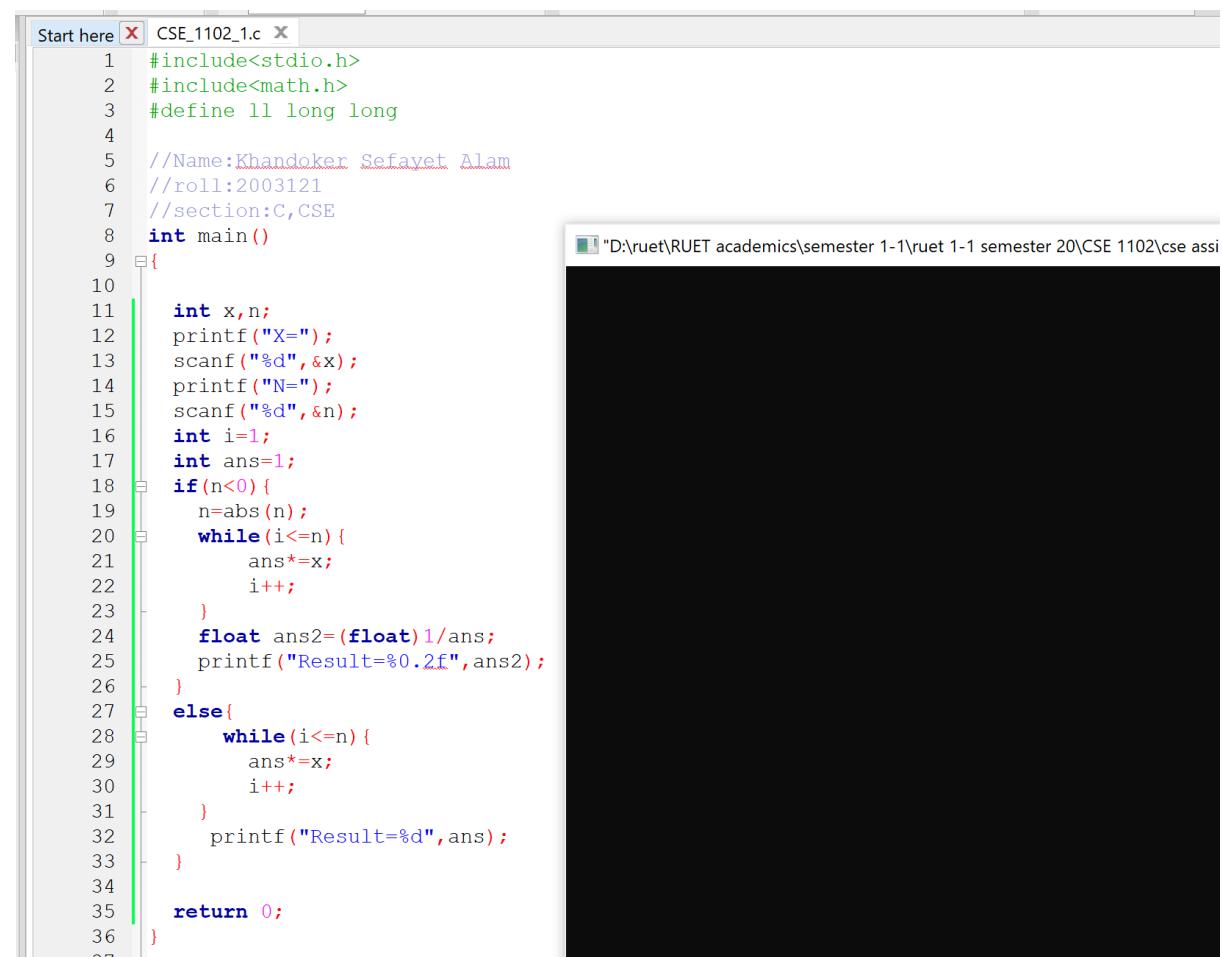
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

emics\semester 1-1\rueet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 17, Col 13, Pos 271

Problem - 5.5: Write a program that prints the value of X^n .

<u>Sample Input - 1:</u> X = 2 n = 2	<u>Sample Output - 1:</u> Result = 4
<u>Sample Input - 2:</u> X = 2 n = -2	<u>Sample Output:</u> Result = 0.25

Solution:



```
Start here CSE_1102_1.c
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int x,n;
12     printf("X=");
13     scanf("%d",&x);
14     printf("N=");
15     scanf("%d",&n);
16     int i=1;
17     int ans=1;
18     if(n<0){
19         n=abs(n);
20         while(i<=n) {
21             ans*=x;
22             i++;
23         }
24         float ans2=(float)1/ans;
25         printf("Result=%0.2f",ans2);
26     }
27     else{
28         while(i<=n) {
29             ans*=x;
30             i++;
31         }
32         printf("Result=%d",ans);
33     }
34
35     return 0;
36 }
```

Logs & others

File L.. Message

```
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ====

```

CSE_1102_1.c C/C++ Windows (CR+LF) WINDOWS-1252

Problem - 5.6: Write a program for the following pattern:

```
* * * *
* * *
* *
*
```

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for the number of rows and then prints a diamond pattern of asterisks. On the right, the terminal window shows the output for 4 rows, followed by build logs at the bottom.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int i,j,n;
12     printf("Enter the number of rows: ");
13     scanf("%d",&n);
14     printf("OUTPUT:\n");
15     for(i=n;i>=1;i--) {
16         for(j=1;j<=i;j++) {
17             printf("*");
18         }
19         printf("\n");
20     }
21     return 0;
22 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment
Enter the number of rows: 4
OUTPUT:

**
*
Process returned 0 (0x0) execution time : 0.868 s
Press any key to continue.

Logs & others
Code::Blocks x Search results x Cccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ messages x Cs
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 5.7: Write a program for the following pattern:

```
*  
* *  
* * *  
* * * *  
* * * * *
```

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C program named 'CSE_1102_1.c'. The code includes comments for authorship and date, and defines a function 'main' that prompts for the number of rows and prints a diamond pattern using nested loops. The output window shows the execution of the program, where it asks for the number of rows (5), then displays the diamond pattern, and finally returns 0. The logs & others window at the bottom shows build messages.

```
Start here X CSE_1102_1.c X  
1 #include<stdio.h>  
2 #include<math.h>  
3 #define ll long long  
4  
5 //Name:Khandoker Sefayet Alam  
6 //roll:2003121  
7 //section:C,CSE  
8 int main()  
9 {  
10  
11     int i,j,k,n;  
12     printf("Enter the number of rows: ");  
13     scanf("%d",&n);  
14     printf("OUTPUT:\n");  
15     for(i=1;i<=n;i++) {  
16         for(j=1;j<=n-i;j++) {  
17             printf(" ");  
18         }  
19         for(k=n-i+1;k<=n;k++) {  
20             printf("* ");  
21         }  
22         printf("\n");  
23     }  
24     return 0;  
25 }  
26
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe
Enter the number of rows: 5
OUTPUT:
*
* *
* * *
* * * *
* * * * *
Process returned 0 (0x0) execution time : 1.355 s
Press any key to continue.

Logs & others
File L... Message
==== Build file: "no target" in "no project"
==== Build finished: 0 error(s), 0 warning(s)

Problem - 5.8: Write a program for the following pattern:

```
1
2 3
4 5 6
7 8 9 0
1 2 3 4 5
```

Solution:

The screenshot shows the Code::Blocks IDE interface. The code editor window displays a C program named 'CSE_1102_1.c'. The program prompts the user for the number of rows, initializes variables, and uses nested loops to print a diamond-shaped pattern of numbers. The terminal window shows the execution of the program, where it asks for input, displays the output pattern, and then exits. The logs & others window shows build messages indicating no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int i,j,k,n;
12     printf("Enter the number of rows: ");
13     scanf("%d",&n);
14     int cnt=1;
15     printf("OUTPUT:\n");
16     for(i=1;i<=n;i++) {
17         for(j=1;j<=n-i;j++) {
18             printf(" ");
19         }
20         for(k=n-i+1;k<=n;k++) {
21             printf("%d ",cnt);
22             cnt++;
23             if(cnt==10){cnt=0;}
24         }
25         printf("\n");
26     }
27     return 0;
28 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.exe

Enter the number of rows: 5

OUTPUT:

1
2 3
4 5 6
7 8 9 0
1 2 3 4 5

Process returned 0 (0x0) execution time : 0.936 s

Press any key to continue.

Logs & others

Code::Blocks x Search results x Cccc x Build

File L.. Message

==== Build file: "no target" in "no project" (0 errors, 0 warnings)

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 23, Col 27, Pos 431

Lab No. -06

Problem - 6.1: Write a program that will store N numbers in an array and display the elements of that array in reverse order of index.

Sample Input:

Enter the number of elements: 5

Enter 5 elements:

```
10  
9  
8  
7  
5
```

Sample Output:

The elements in reverse order:

```
Element[5] = 5 ,  
Element[4] = 7 ,  
Element[3] = 8 ,  
Element[2] = 9 ,  
Element[1] = 10 ,
```

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for the number of elements and then reads five integers from the user. It then prints the elements in reverse order. On the right, the terminal window shows the execution of the program. The user enters '5' as the number of elements and then inputs the values 10, 9, 8, 7, and 5. The program outputs the elements in reverse order: 5, 7, 8, 9, and 10. The terminal also shows the build logs at the bottom, indicating a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int n,i;
12     printf("Enter the number of elements: ");
13     scanf("%d",&n);
14     int arr[n];
15     printf("Enter %d elements: \n",n);
16     for(i=0;i<n;i++)
17     {
18         scanf("%d",&arr[i]);
19     }
20     printf("The elements in reverse order:\n");
21     for(i=n-1;i>=0;i--)
22     {
23         printf("Element[%d]=%d\n",i+1,arr[i]);
24     }
25     return 0;
}

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assi
Enter the number of elements: 5
Enter 5 elements:
10
9
8
7
5
The elements in reverse order:
Element[5]=5
Element[4]=7
Element[3]=8
Element[2]=9
Element[1]=10

Process returned 0 (0x0)   execution time : 4.459 s
Press any key to continue.

Logs & others
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ====
Code:Blocks x Search results x Cccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ messages x Cs
```

Problem - 6.2: Write a program that will store the class test marks of N students in an array and find the average class test mark. [Consider that class test marks can only be integer and display the average class test mark in floating point format]

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for the number of students and their individual test marks, then calculates and prints the average. On the right, the terminal window shows the execution of the program, inputting 10 marks and outputting an average of 16.700. Below the terminal is the 'Logs & others' panel, which shows build logs indicating no errors or warnings.

```
Start here CSE_1102_1.c
1 #include<stdio.h>
2 #include<math.h>
3 #define ll long long
4
5 //Name:Khandoker Sefayet Alam
6 //roll:2003121
7 //section:C,CSE
8 int main()
9 {
10
11     int n,i;
12     printf("Enter the number of students: ");
13     scanf("%d",&n);
14     int arr[n];
15     int sum=0;
16     float avg;
17     printf ("Enter %d test marks: \n",n);
18     for(i=0;i<n;i++)
19     {
20         scanf ("%d",&arr[i]);
21         sum+=arr[i];
22     }
23     avg=(float)sum/n;
24     printf ("The average of the marks= %.3f\n",avg);
25
26     return 0;
27 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse

```
Enter the number of students: 10
Enter 10 test marks:
15
15
16
14
20
19
18
17
16
17
The average of the marks= 16.700
Process returned 0 (0x0)   execution time : 4.431 s
Press any key to continue.
```

Logs & others

```
Code::Blocks X Search results X Cccc X Build log X Build messages X CppCheck/Vera++ X CppCheck/Vera++ messages X Cs
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===
```

Problem - 6.3: Write a program to find the largest element of an array.

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays the code for 'CSE_1102_1.c'. The code includes headers for stdio.h, math.h, and limits.h, defines ll as long long, and includes comments for Name: Khandoker Sefayet Alam, roll: 2003121, and section: C, CSE. The main function prompts for the number of elements and an array, then iterates through the array to find the maximum value, printing it at the end. The logs & others tab shows a build message indicating no target project was found, and the status bar at the bottom shows the file path and build information.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11     int n,i;
12     printf("Enter the number of elements: ");
13     scanf("%d",&n);
14     int arr[n];
15     int maxm=INT_MIN;
16     printf("Enter %d elements: \n",n);
17     for(i=0;i<n;i++)
18     {
19         scanf("%d",&arr[i]);
20         if(arr[i]>maxm) maxm=arr[i];
21     }
22     printf("The largest element= %d\n",maxm);
23
24     return 0;
25 }
26
27

Logs & others
Code::Blocks x Search results x Ccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ messages x Cscope x
File L... Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ====
mics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 23, Col 42, Pos 442
```

Problem - 6.4: Write a program that will count the number of odd elements stored in an array.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code prompts the user for the number of elements and then iterates through the array to count the odd elements. On the right, the terminal window shows the execution of the program, inputting 10 elements and outputting 6 as the count of odd elements. Below the terminal is the build log, which shows a successful build with no errors or warnings.

```
Start here X CSE_1102_1.c X
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11
12     int n,i;
13     printf("Enter the number of elements: ");
14     scanf("%d",&n);
15     int arr[n];
16     int cnt=0;
17     printf("Enter %d elements: \n",n);
18     for(i=0;i<n;i++){
19         scanf("%d",&arr[i]);
20         if(arr[i]%2) cnt++;
21     }
22
23     printf("The number of odd elements= %d\n",cnt);
24
25     return 0;
26
27 }
```

Select "D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse a
Enter the number of elements: 10
Enter 10 elements:
11
14
15
12
101
1
20
60
29
99
The number of odd elements= 6
Process returned 0 (0x0) execution time : 3.257 s
Press any key to continue.

Logs & others

File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 6.5: Write a program that will search a particular element from an array.

Sample Input - 1:

Enter the number of elements: 5

Enter 5 elements:

```
10  
9  
8  
7  
5
```

Element going to be searched = 7

Sample Output - 1:

```
### 7 is found at position: 4
```

Sample Input - 2:

Enter the number of elements: 5

Enter 5 elements:

```
19  
39  
18  
27  
15
```

Element going to be searched = 5

Sample Output - 2:

```
### 5 is not found
```

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code implements a linear search algorithm. It first asks for the number of elements and then for each element's value. It then asks for the target element to search for. If the target is found, it prints the target and its index; if not, it prints a message indicating the target was not found. The right side of the interface shows the terminal window where the program is run. The user enters 5 as the number of elements and then five values: 10, 9, 8, 7, and 5. When asked for the target, the user enters 7. The program outputs that 7 is found at position 4. The terminal also shows the execution time and a prompt to press any key to continue. At the bottom, the logs and messages window shows a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11
12     int n,i;
13     printf("Enter the number of elements: ");
14     scanf("%d",&n);
15     int arr[n];
16     int target,ans;
17     printf("Enter %d elements: \n",n);
18     for(i=0;i<n;i++)
19         scanf("%d",&arr[i]);
20
21
22     printf("The element going to be searched: ");
23     scanf("%d",&target);
24     for(i=0;i<n;i++)
25     {
26         if(arr[i]==target) {ans=i+1;break;}
27     }
28     printf("### %d is found at position: %d",target,ans);
29
30 }
```

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```
Enter the number of elements: 5
Enter 5 elements:
10
9
8
7
5
The element going to be searched: 7
### 7 is found at position: 4
Process returned 0 (0x0)   execution time : 5.662 s
Press any key to continue.
```

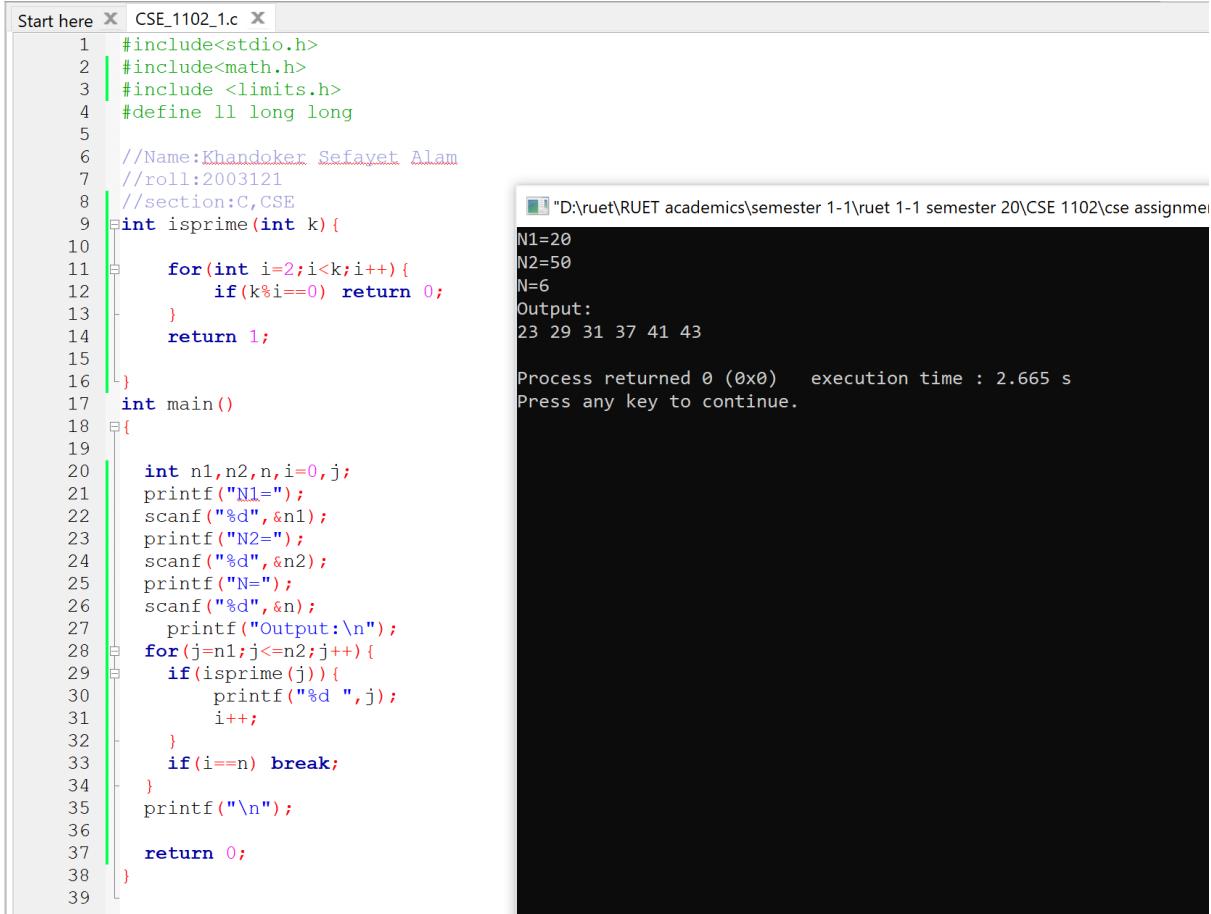
Logs & others

```
File L.. Message
    == Build file: "no target" in "no project" (compiler: unknown) ==
    == Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ==
```

Problem - 6.6: Write a program that find 1st N prime numbers from N1 to N2.

<u>Sample input:</u>	<u>Sample Output:</u>
N1 : 20 N2 : 50 N : 6	23 29 31 37 41 43

Solution:



The screenshot shows the Code::Blocks IDE interface. The main window displays a C program named "CSE_1102_1.c". The code includes a helper function "isprime" and a main function that reads input values N1, N2, and N, and then prints the first N prime numbers between N1 and N2. The terminal window shows the execution of the program with sample inputs and output. The logs & others tab at the bottom shows a build message indicating no errors or warnings.

```
#include<stdio.h>
#include<math.h>
#include <limits.h>
#define ll long long
//Name:Khandoker Sefayet Alam
//roll:2003121
//section:C,CSE
int isprime(int k){
    for(int i=2;i<k;i++) {
        if(k%i==0) return 0;
    }
    return 1;
}
int main()
{
    int n1,n2,n,i=0,j;
    printf("N1=");
    scanf("%d",&n1);
    printf("N2=");
    scanf("%d",&n2);
    printf("N=");
    scanf("%d",&n);
    printf("Output:\n");
    for(j=n1;j<=n2;j++) {
        if(isprime(j)) {
            printf("%d ",j);
            i++;
        }
        if(i==n) break;
    }
    printf("\n");
    return 0;
}
```

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N1=20
N2=50
N=6
Output:
23 29 31 37 41 43

Process returned 0 (0x0) execution time : 2.665 s
Press any key to continue.

Logs & others

File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 6.7: Write a program from the following:

Fibonacci Sequence: 0 1 1 2 3 5 8 13 21

Sample Input:
Enter the number: 8

Sample Output:
8 is in the sequence.
Position → 7

Sample Input:
Enter the number: 7

Sample Output:
7 is not in the sequence.

Solution:

Start here X CSE_1102_1.c X

```

1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoher Safayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int isprime(int k){
10
11     for(int i=2;i<k;i++){
12         if(k%i==0) return 0;
13     }
14     return 1;
15 }
16
17 int main()
18 {
19
20     int n,i=0,j;
21     int arr[1000];
22     arr[0]=0;
23     arr[1]=1;
24     for(i=2;i<1000;i++){
25         arr[i]=arr[i-1]+arr[i-2];
26     }
27     printf("Enter a number: ");
28     scanf("%d",&n);
29
30     for(i=0;i<1000;i++){
31         if(arr[i]==n){
32             printf("%d is in the sequence.\n Position->%d ",n,i+1);
33             break;
34         }
35         else if(arr[i]>n){
36             printf("%d is not in the sequence.\n",n);
37             break;
38         }
39     }
40
41     return 0;
42 }
```

Logs & others

File L.. Message
--- Build file: "no target" in "no project" (compiler: unknown) ---
--- Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ---

Start here X CSE_1102_1.c X

```

1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoher Safayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int isprime(int k){
10
11     for(int i=2;i<k;i++){
12         if(k%i==0) return 0;
13     }
14     return 1;
15 }
16
17 int main()
18 {
19
20     int n,i=0,j;
21     int arr[1000];
22     arr[0]=0;
23     arr[1]=1;
24     for(i=2;i<1000;i++){
25         arr[i]=arr[i-1]+arr[i-2];
26     }
27     printf("Enter a number: ");
28     scanf("%d",&n);
29
30     for(i=0;i<1000;i++){
31         if(arr[i]==n){
32             printf("%d is in the sequence.\n Position->%d ",n,i+1);
33             break;
34         }
35         else if(arr[i]>n){
36             printf("%d is not in the sequence.\n",n);
37             break;
38         }
39     }
40
41     return 0;
42 }
```

Logs & others

File L.. Message
--- Build file: "no target" in "no project" (compiler: unknown) ---
--- Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ---

Problem - 6.8: Write a program for the pattern.

Sample Input:
No. of lines: 5

Sample Output:

```
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
```

Solution:

The screenshot shows the Code::Blocks IDE interface. The main window displays a C source code file named "CSE_1102_1.c". The code prompts the user for the number of lines and then prints a diamond-shaped pattern of numbers. The terminal window shows the execution of the program, inputting "5" and displaying the output pattern. The build log at the bottom shows a successful build with no errors or warnings.

```
Start here x | CSE_1102_1.c x |
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11     int i,j,n,cnt=0;
12     printf("No. of lines: ");
13     scanf("%d",&n);
14     for(i=1;i<=n;i++){
15         for(j=1;j<=n-i;j++){
16             printf(" ");
17         }
18         cnt=0;
19         for(j=n-i+1;j<=n;j++){
20             printf("%d",++cnt);
21         }
22         for(j=i-1;j>=1;j--){
23             printf("%d",--cnt);
24         }
25         printf("\n");
26     }
27     return 0;
28 }
```

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```
No. of lines: 5
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1

Process returned 0 (0x0)   execution time : 0.614 s
Press any key to continue.
```

Logs & others

File L.. Message

```
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===
```

Lab No. -07

Problem - 7.1: Write a program to determine whether a number is a perfect number or not.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code prompts the user for a number, calculates the sum of its divisors, and checks if the sum equals the original number to determine if it's a perfect number. On the right, the terminal window shows the execution of the program for the input number 6, which is identified as a Perfect Number. Below the terminal, the build logs show a successful build with no errors or warnings.

```
Start here CSE_1102_1.c
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11     int i,num,sum=0;
12
13     printf("Enter any number: ");
14     scanf("%d",&num);
15
16     for(i=1;i<num;i++)
17     {
18         if(num%i==0)
19             sum=sum+i;
20     }
21
22     if(sum==num) printf("\n%d is a Perfect Number",num);
23     else printf("\n%d is not the Perfect Number",num);
24
25     return 0;
26 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignr
Enter any number: 6
6 is a Perfect Number
Process returned 0 (0x0) execution time : 0.858 s
Press any key to continue.

Logs & others
Code::Blocks X Search results X Cccc X Build log X Build messages X CppCheck/Vera++ X CppCheck/Vera++ messages X C
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 7.2: Write a program that find the 1st N perfect numbers.

<u>Sample Input:</u> N = 2	<u>Sample Output:</u> 1st 2 perfect numbers: 6 28
-------------------------------	---

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code prompts the user for an integer N, then iterates through numbers from 1 to 10000 to find perfect numbers. A perfect number is defined as a number that is equal to the sum of its proper divisors. The program prints the first N perfect numbers to the console. On the right, the terminal window shows the execution of the program with N=2, resulting in the output "first 2 perfect numbers: 6 28". Below the terminal, the build logs show a successful build with no errors or warnings.

```
Start here X CSE_1102_1.c X
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11     int i, num, n, sum, cnt=0;
12
13     printf("Enter N=");
14     scanf("%d", &n);
15     printf("The first %d perfect numbers: \n", n);
16     for(num=1;num<10000;num++) {
17         sum=0;
18         for(i=1;i<num;i++) {
19             if(num%i==0)
20                 sum=sum+i;
21         }
22
23         if(sum==num) (printf("%d ", num); cnt++);
24         if(cnt==n) break;
25     }
26     return 0;
27 }
28
29
```

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Enter N=2

first 2 perfect numbers:

6 28

Process returned 0 (0x0) execution time : 2.434 s

Press any key to continue.

Logs & others

Code::Blocks X Search results X Ccc X Build log X Build messages X CppCheck/Vera++ X CppCheck/Vera++ messages X

File L.. Message

==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 7.3: Write a program that will take N integers in an array and put all the even elements of the array in a different array.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for the number of elements (N) and then for N integer values. It initializes two arrays: 'arr' for all elements and 'even' for even elements. It iterates through the input, copying even numbers to the 'even' array. Finally, it prints the even elements. On the right, a terminal window shows the execution of the program. The user enters '10' as N, followed by ten integer values: 11, 13, 12, 14, 16, 18, 91, 92, 100, 101. The program then outputs the even elements: 12, 14, 16, 18, 92, 100. At the bottom, the build log window shows a successful build with no errors or warnings.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11     int i,num,n,sum,cnt=0;
12
13     printf("Enter N=");
14     scanf("%d",&n);
15     int arr[n],even[n],k=0;
16     printf("\nEnter %d elements: ",n);
17     for(i=0;i<n;i++)
18         scanf("%d",&arr[i]);
19         if(arr[i]%2==0){even[k++]=arr[i];}
20     }
21     printf("The even elements: \n");
22     for(i=0;i<k;i++)
23         printf("%d ",even[i]);
24     }
25     return 0;
26 }
```

D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102_1.c

Enter N=10

Enter 10 elements: 11 13 12 14 16 18 91 92 100 101

The even elements:

12 14 16 18 92 100

Process returned 0 (0x0) execution time : 17.112 s

Press any key to continue.

Logs & others

Code::Blocks x Search results x Ccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ messages x Cscope x

File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

Problem - 7.4: Write a program that will take the value of N from the users and generate an Identity matrix of the size $n \times n$.

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code prompts the user for a value of N, initializes an array arr of size N by N, and then prints the identity matrix. The code editor has syntax highlighting for C keywords and comments.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11     int n,i,j;
12
13     printf("Enter N=") ;
14     scanf("%d",&n);
15     int arr[n][n];
16     printf("The identity matrix: \n");
17     for(i=0;i<n;i++){
18         for(j=0;j<n;j++){
19             if(i==j)(arr[i][j]=1)
20             else{arr[i][j]=0;}
21         }
22     }
23     for(i=0;i<n;i++){
24         for(j=0;j<n;j++){
25             printf("%d",arr[i][j]);
26         }
27         printf("\n");
28     }
29     return 0;
30 }
```

On the right, the terminal window shows the execution of the program. It asks for the value of N (Enter N=7), then displays the 7x7 identity matrix. The matrix is printed as follows:

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse assignment\CSE_1102
Enter N=7
The identity matrix:
1000000
0100000
0010000
0001000
0000100
0000010
0000001

Process returned 0 (0x0)   execution time : 0.486 s
Press any key to continue.
```

Below the terminal window, the logs & others tab shows the build log:

```
Logs & others
Code::Blocks x Search results x Cccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera++ messages
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===
```

Problem - 7.5: Write a program that prints the transpose matrix of a matrix.

<u>Sample Input:</u>	<u>Sample Output:</u>
1 2 3 4 5 6	1 4 2 5 3 6

Solution:

The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named 'CSE_1102_1.c'. The code prompts the user for the number of rows and columns, initializes a 2x3 matrix 'arr' with values 1, 2, 3 in the first row and 4, 5, 6 in the second row. It then creates a transpose matrix 'trans' where the columns of 'arr' become the rows of 'trans'. Finally, it prints the transpose matrix. On the right, the terminal window shows the execution of the program. It asks for 'rows=2' and 'columns=3'. It then enters the elements 1, 2, 3 and 4, 5, 6. The program outputs the transpose matrix as 1 4, 2 5, 3 6. The terminal also shows the process return code and a prompt to press any key to continue.

```
Start here x CSE_1102_1.c x
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11     int n,m,i,j;
12
13     printf("Enter the number of rows=");
14     scanf("%d",&n);
15     printf("\nEnter the number of coloumns: ");
16     scanf("%d",&m);
17     int arr[n][m],trans[m][n];
18     printf("Enter the elements: \n");
19     for(i=0;i<n;i++){
20         for(j=0;j<m;j++){
21             scanf("%d",&arr[i][j]);
22         }
23     }
24     for(j=0;j<m;j++){
25         for(i=0;i<n;i++){
26             trans[j][i]=arr[i][j];
27         }
28     }
29     printf("THE Transpose matrix: \n");
30     for(j=0;j<m;j++){
31         for(i=0;i<n;i++){
32             printf("%d ",trans[j][i]);
33         }
34         printf("\n");
35     }
36
37     return 0;
}

Logs & others
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ====

```

Problem - 7.6: Write a program for the following:

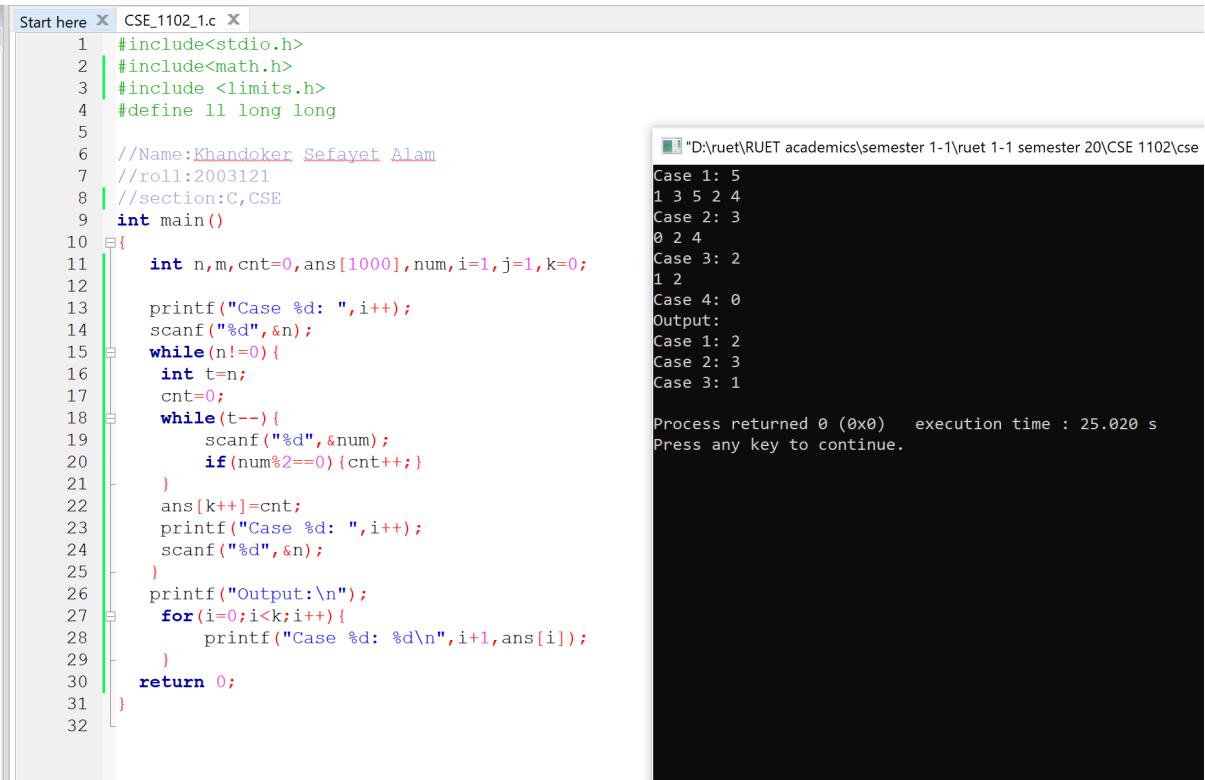
Sample Input:

Case 1: 5
1 3 5 2 4
Case 2: 3
0 2 4
Case 3: 2
1 2
Case 4: 0

Sample Output:

The output:
Case 1: 2
Case 2: 3
Case 3: 1

Solution:



The screenshot shows the Code::Blocks IDE interface. On the left, the code editor displays a C program named CSE_1102_1.c. The code reads input integers from the user, counts the number of odd digits in each integer, and prints the count as the output for each case. The code editor has syntax highlighting for C keywords and comments.

```
Start here CSE_1102_1.c
1 #include<stdio.h>
2 #include<math.h>
3 #include <limits.h>
4 #define ll long long
5
6 //Name:Khandoker Sefayet Alam
7 //roll:2003121
8 //section:C,CSE
9 int main()
10 {
11     int n,m,cnt=0,ans[1000],num,i=1,j=1,k=0;
12
13     printf("Case %d: ",i++);
14     scanf("%d",&n);
15     while(n!=0){
16         int t=n;
17         cnt=0;
18         while(t--){
19             scanf("%d",&num);
20             if(num%2==0) {cnt++; }
21         }
22         ans[k++]=cnt;
23         printf("Case %d: ",i++);
24         scanf("%d",&n);
25     }
26     printf("Output:\n");
27     for(i=0;i<k;i++){
28         printf("Case %d: %d\n",i+1,ans[i]);
29     }
30     return 0;
31 }
```

On the right, the terminal window shows the execution of the program. It prints the expected output for each case based on the input provided in the sample input table. The terminal also shows the execution time and a prompt to press any key to continue.

```
D:\ruet\RUET academics\semester 1-1\ruet 1-1 semester 20\CSE 1102\cse
Case 1: 5
1 3 5 2 4
Case 2: 3
0 2 4
Case 3: 2
1 2
Case 4: 0
Output:
Case 1: 2
Case 2: 3
Case 3: 1

Process returned 0 (0x0)   execution time : 25.020 s
Press any key to continue.
```

At the bottom, the logs & others tab shows the build log for the project, indicating a successful build with no errors or warnings.

```
Logs & others
Code::Blocks Search results Ccc Build log Build messages CppCheck/Vera++ CppCheck/Vera++ messages
File L.. Message
==== Build file: "no target" in "no project" (compiler: unknown) ====
==== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===
```