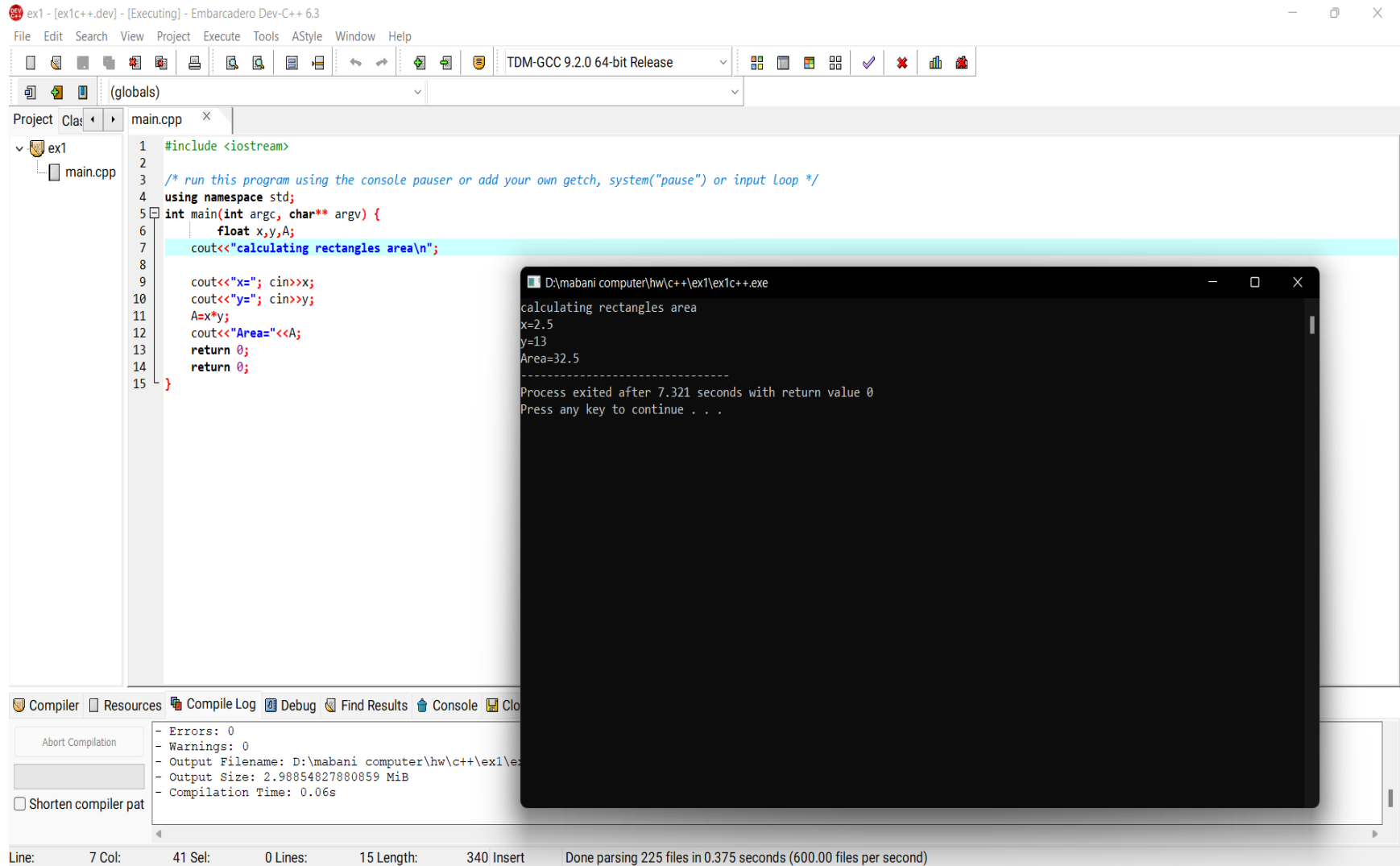


1. مساحت مستطیل



The screenshot displays the Embarcadero Dev-C++ 6.3 IDE. The main window shows the source code for a C++ program named `main.cpp`. The code calculates the area of a rectangle by taking user input for the width (`x`) and height (`y`), then computing the area (`A = x * y`). The output is displayed in a console window titled `D:\mabani computer\hw\c++\ex1\ex1c++.exe`.

```
1 #include <iostream>
2
3 /* run this program using the console pauser or add your own getch, system("pause") or input loop */
4 using namespace std;
5 int main(int argc, char** argv) {
6     float x,y,A;
7     cout<<"calculating rectangles area\n";
8
9     cout<<"x="; cin>>x;
10    cout<<"y="; cin>>y;
11    A=x*y;
12    cout<<"Area="<<A;
13    return 0;
14    return 0;
15 }
```

The console window shows the following output:

```
calculating rectangles area
x=2.5
y=13
Area=32.5
-----
Process exited after 7.321 seconds with return value 0
Press any key to continue . . .
```

The bottom status bar indicates the current line and column: Line: 7 Col: 41. The bottom right corner shows the compilation status: Done parsing 225 files in 0.375 seconds (600.00 files per second).

2. محیط و مساحت دایره

Project1 - [ex2.dev] - [Executing] - Embarcadero Dev-C++ 6.3

File Edit Search View Project Execute Tools AStyle Window Help

TDM-GCC 9.2.0 64-bit Release

(globals)

Project1

main.cpp

```
1 #include <iostream>
2
3 /* run this program using the console pauser or add your own getch, system("pause") or input loop */
4 using namespace std;
5 int main(int argc, char** argv) {
6     float r,A,P;
7     cout<<"circles area and perimeter\n";
8     cout<<"r="; cin>>r;
9     A=r*r*3.14;
10    P=2*r*3.14;
11    cout<<"area="<<A;
12    cout<<"\nperimeter="<<P;
13
14    return 0;
15 }
```

D:\mabani computer\hw\c++\ex2\ex2.exe

circles area and perimeter
r=12.25
area=471.196
perimeter=76.93

Process exited after 7.405 seconds with return value 0
Press any key to continue . . .

Compiler Resources Compile Log Debug Find Results Console Close

Abort Compilation

Shorten compiler path

Errors: 0
Warnings: 0
Output Filename: D:\mabani computer\hw\c++\ex2\ex2.exe
Output Size: 2.98854827880859 MiB
Compilation Time: 0.05s

Line: 1 Col: 1 Sel: 0 Lines: 15 Length: 350 Insert Done parsing 225 files in 0.375 seconds (600.00 files per second)

$$3.y=2x^3 + 3x^2 + x + 5$$

The screenshot displays the Embarcadero Dev-C++ 6.3 IDE. The main window shows a C++ source file named `main.cpp` with the following code:

```
1 #include <iostream>
2
3 /* run this program using the console pauser or add your own getch, system("pause") or input loop */
4 using namespace std;
5 int main(int argc, char** argv) {
6     float x,y;
7     cout<<"\t\t\tquadratic equation"<<"\nx=";
8     cin>>x;
9     y=2*x*x*x+3*x*x+x+5;
10    cout<<"y="<<y;
11    return 0;
12 }
```

The code is highlighted with a light blue background. A console window is open in the foreground, showing the output of the program:

```
D:\mabani computer\hw\c++\ex3\ex3.exe
quadratic equation
x=2
y=35
-----
Process exited after 1.052 seconds with return value 0
Press any key to continue . . .
```

The IDE's status bar at the bottom indicates the following statistics: Line: 6, Col: 15, Sel: 0, Lines: 12, Length: 302, Insert: Done parsing 225 files in 0.36 seconds (625.00 files per second).

4. معادله درجه دو

The image shows a C++ program in an IDE (Embarcadero Dev-C++ 6.3) and its execution results in three separate console windows. The program calculates the roots of a quadratic equation $ax^2 + bx + c = 0$ based on the discriminant $\Delta = b^2 - 4ac$.

main.cpp Code:

```
5 int main(int argc, char** argv) {
6     cout<<"quadratic equation\n";
7     float a,b,c,delta,x1,x2;
8     cout<<"a="; cin>>a;
9     cout<<"\nb="; cin>>b;
10    cout<<"\nc="; cin>>c;
11    delta=b*b-4*a*c;
12    if (a==0)
13    { cout<<"try again";
14      }
15    else {
16
17        if (delta>0)
18        {
19            x1=(-b+sqrt(delta))/(2*a);
20            x2=(-b-sqrt(delta))/(2*a);
21            cout<<"x1="<<x1;
22            cout<<"\nx2="<<x2;
23        }
24        if (delta==0)
25        {
26            x1=(-b/(2 *a));
27            x2=(-b/(2 *a));
28            cout<<"the equation has one root\n";
29            cout<<"x1="<<x1;
30            cout<<"\tx2="<<x2;
31        }
32        if (delta<0)
33        { cout<<"the equation has no root";
34          }
35
36    }
```

Execution Results:

Window 1 (a=1, b=6, c=3):

```
quadratic equation
a=1
b=6
c=3
x1=-0.55051
x2=-5.44949
-----
Process exited after 9.959 seconds with return value 0
Press any key to continue . . .
```

Window 2 (a=5, b=2, c=1):

```
quadratic equation
a=5
b=2
c=1
the equation has no root
-----
Process exited after 8.961 seconds with return value 0
Press any key to continue . . .
```

Window 3 (a=1, b=2, c=1):

```
quadratic equation
a=1
b=2
c=1
the equation has one root
x1=-1 x2=-1
-----
Process exited after 2.341 seconds with return value 0
Press any key to continue . . .
```

Window 4 (a=0, b=2, c=5):

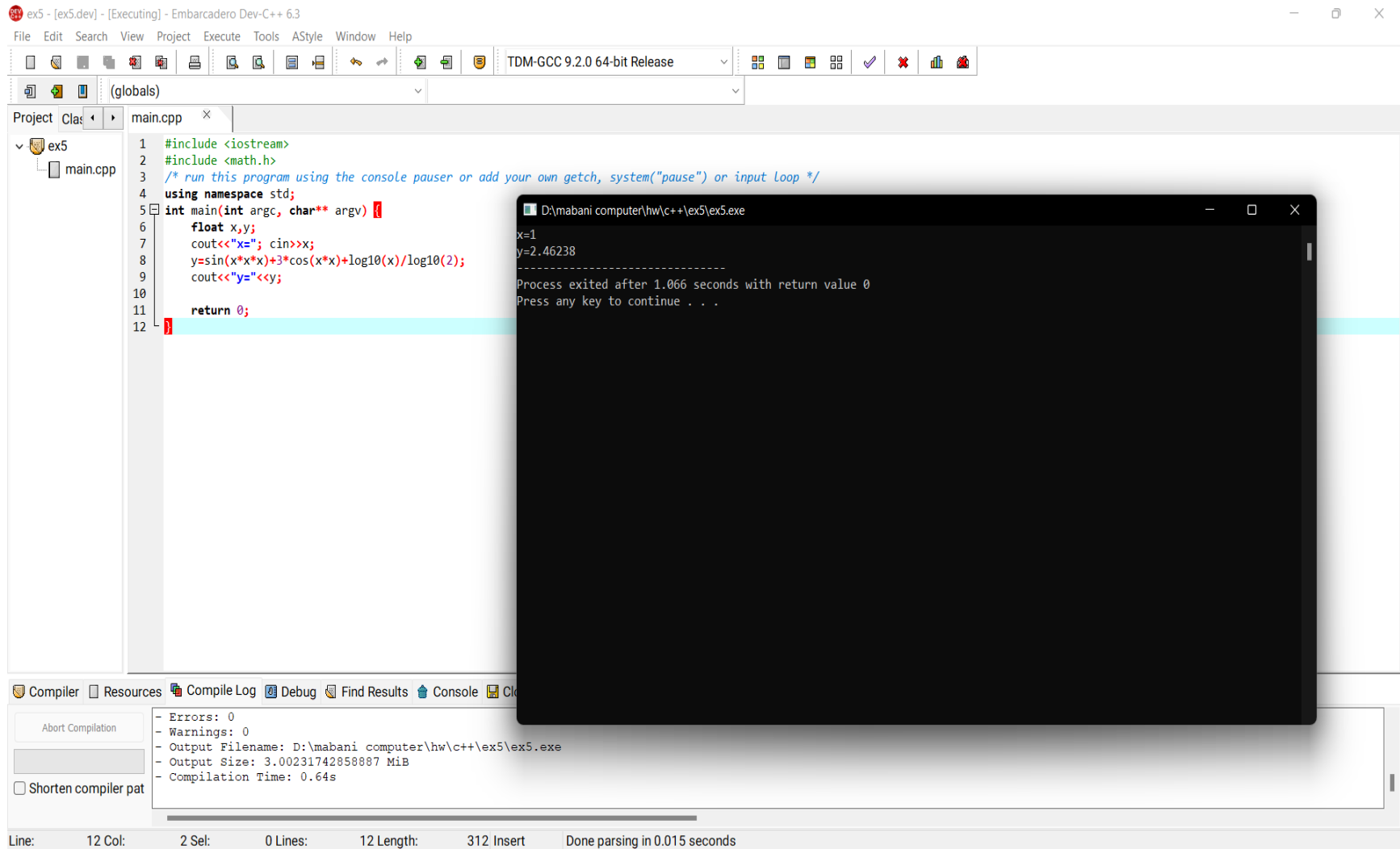
```
quadratic equation
a=0
b=2
c=5
try again
-----
Process exited after 2.781 seconds with return value 0
Press any key to continue . . .
```

IDE Status:

- Compiler: No errors or warnings.
- Output Filename: D:\mabani computer\hw\c++\ex4\ex4.exe
- Output Size: 2.99273109436035 MiB
- Compilation Time: 0.06s

Line: 39 Col: 1 Sel: 0 Lines: 39 Length: 773 Insert

$$5. y = \sin(x^3) + 3 \cos(x^2) + \log_2 x$$



$$6.s = 1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n}$$

The image shows a screenshot of an IDE (Embarcadero Dev-C++ 6.3) with a C++ project named 'test 6'. The main.cpp file contains the following code:

```

1 #include <iostream>
2 #include <math.h>
3 /* run this program using the console pause feature
4 using namespace std;
5 int main(int argc, char** argv) {
6     int n;
7     float sum=0;
8     cout<<"n="; cin>>n;
9     while(n>0)
10     {
11         sum+=pow(n,-1);
12         n--;
13     }
14     cout<<"sum="<<sum;
15
16     return 0;
17 }
18

```

Two console windows are open, showing the program's output for different values of n:

Top console window (D:\mabani computer\hw\c++\ex6\test 6.exe):

```

n=6
sum=2.45
-----
Process exited after 2.173 seconds with return value 0
Press any key to continue . . .

```

Bottom console window (D:\mabani computer\hw\c++\ex6\test 6.exe):

```

n=2
sum=1.5
-----
Process exited after 11.16 seconds with return value 0
Press any key to continue . . .

```

The IDE status bar at the bottom shows: Line: 6 Col: 10 Sel: 0 Lines: 18 Length: 335 Insert Done parsing 227 files in 0.375 seconds (605.33 files per second).

7. بخش پذیری بر 5

The screenshot displays the Embarcadero Dev-C++ 6.3 IDE. The main window shows the source code for a program that checks if a number is divisible by 5. The code is as follows:

```
1 #include <iostream>
2 #include <math.h>
3 /* run this program using the console pauser or add your own getch,
4 using namespace std;
5 int main(int argc, char** argv) {
6     int x;
7     cout<<"x="; cin>>x;
8     {
9         if (x%5==0)
10            {cout<<"number is divisible by 5";}
11     else
12         {cout<<"number is not divisible by 5";}
13     }
14 }
15
16 return 0;
17 }
```

The console window shows the output for two test cases:

Test Case 1: x=16

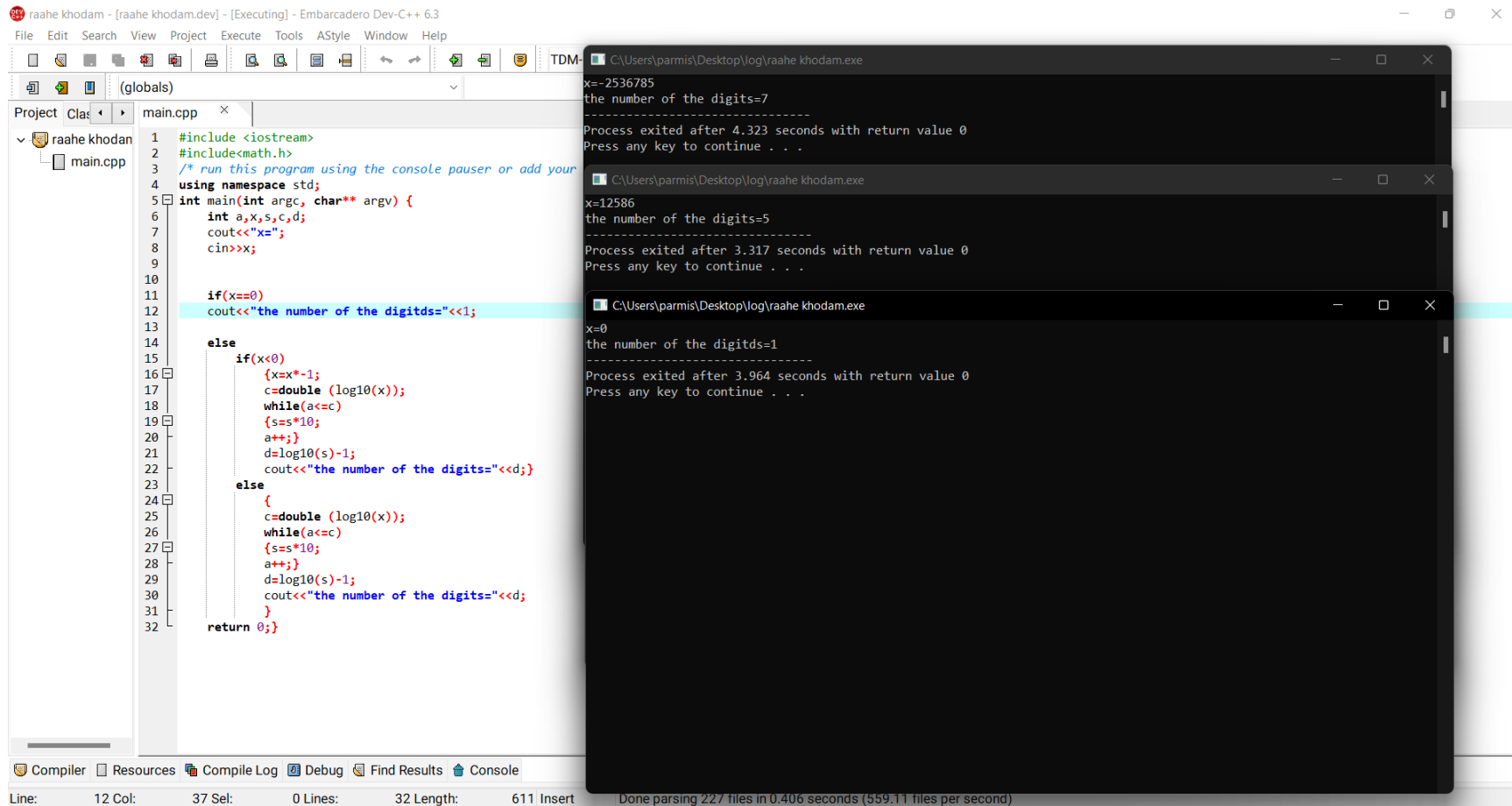
```
x=16
number is not divisible by 5
-----
Process exited after 1.329 seconds with return value 0
Press any key to continue . . .
```

Test Case 2: x=25

```
x=25
number is divisible by 5
-----
Process exited after 2.853 seconds with return value 0
Press any key to continue . . .
```

The status bar at the bottom indicates the current line and column: Line: 12 Col: 16 Sel: 0 Lines: 17 Length: 359 Insert Done parsing 227 files in 0.391 seconds (580.56 files per second).

8. تعداد ارقام هر عدد



The image shows a C++ IDE (Embarcadero Dev-C++ 6.3) with a project named "raahe khodam". The main.cpp file contains the following code:

```
1 #include <iostream>
2 #include <math.h>
3 /* run this program using the console pauser or add your own pauser
4 using namespace std;
5 int main(int argc, char** argv) {
6     int a,x,s,c,d;
7     cout<<"x=";
8     cin>>x;
9
10
11     if(x==0)
12         cout<<"the number of the digits="<<1;
13
14     else
15         if(x<0)
16             {x=x*-1;
17             c=double (log10(x));
18             while(a<=c)
19             {s=s*10;
20             a++;}
21             d=log10(s)-1;
22             cout<<"the number of the digits="<<d;}
23         else
24         {
25             c=double (log10(x));
26             while(a<=c)
27             {s=s*10;
28             a++;}
29             d=log10(s)-1;
30             cout<<"the number of the digits="<<d;
31         }
32     return 0;}
```

Three console windows are shown, each displaying the output of the program for a different input:

- Input: `x=-2536785`
Output: `the number of the digits=7`
Process exited after 4.323 seconds with return value 0
Press any key to continue . . .
- Input: `x=12586`
Output: `the number of the digits=5`
Process exited after 3.317 seconds with return value 0
Press any key to continue . . .
- Input: `x=0`
Output: `the number of the digits=1`
Process exited after 3.964 seconds with return value 0
Press any key to continue . . .

The status bar at the bottom indicates: Line: 12 Col: 37 Sel: 0 Lines: 32 Length: 611 Insert Done parsing 227 files in 0.406 seconds (559.11 files per second)

8. راه دیگر

The image shows a C++ IDE with a project named 'exx8'. The main.cpp file contains the following code:

```
1 #include <iostream>
2 #include <math.h>
3 /* run this program using the console pauser or add your own getch, system("pause") or conchar_t getch */
4 using namespace std;
5 int main(int argc, char** argv) {
6     int x, m=1;
7     cout<<"x="; cin>>x;
8     if (x<0)
9     {
10         x=x*-1;
11         while(x>0)
12         {
13             x=x/10;
14             m=m+1;
15             x--;
16         }
17         cout<<"the number of the digits= "<<m;
18     }
19     else
20     {
21         while(x>0)
22         {
23             x=x/10;
24             m=m+1;
25             x--;
26         }
27         cout<<"the number of the digits= "<<m;
28     }
29     return 0;
30 }
```

Three terminal windows show the program's execution:

- Terminal 1: `x=0`, the number of the digits= 1, Process exited after 1.254 seconds with return value 0.
- Terminal 2: `x=-125635`, the number of the digits= 6, Process exited after 4.235 seconds with return value 0.
- Terminal 3: `x=1654`, the number of the digits= 4, Process exited after 14.88 seconds with return value 0.

The IDE status bar at the bottom shows: Line: 9 Col: 17 Sel: 0 Lines: 27 Length: 474 Insert Done parsing 227 files in 0.39 seconds (582.05 files per second).

9. فاکتوریل هر عدد

The image shows a C++ IDE with a project named "Project1" and a file named "ex9yes.cpp". The code in the file is as follows:

```
1 #include <iostream>
2 #include <math.h>
3 /* run this program using the console pauser or add
4 using namespace std;
5 int main(int argc, char** argv) {
6     int i, fact=1, x;
7     cout<<"x="; cin>>x;
8     if(x==0)
9     {cout<<"fact="<<0;
10    }
11    else
12    {
13
14        for(i=1; i<=x; i++){
15            fact=fact*i;
16        }
17        cout<<"fact="<<fact;
18    }
19    return 0;
20 }
```

Two console windows are open, showing the execution of the program. The top window shows the output for $x=6$, where the factorial is 720. The bottom window shows the output for $x=0$, where the factorial is 0. Both windows indicate that the process exited after a certain number of seconds with a return value of 0.

Compiler: Resources Compile Log Debug Find Results Console

Line: 9 Col: 23 Sel: 0 Lines: 20 Length: 374 Insert Done parsing 227 files in 0.375 seconds (605.33 files per second)

10. حدس عددی که کاربر در نظر دارد

The screenshot displays the Embarcadero Dev-C++ 6.3 IDE. The main editor window shows the source code for `main.cpp`. The code implements a number guessing game where the user has 10 attempts to guess a number between 1 and 1000. The program uses a `while` loop to handle the attempts, updating the range of possible numbers based on whether the guess is higher or lower than the target. The output window shows the program's execution, displaying prompts for the user to press 0 if the number is greater or less than the current guess, and the final result after 10 attempts.

```
1 #include <iostream>
2 #include <math.h>
3 /* run this program using the console pauser or add your own getch() to pause the program */
4 using namespace std;
5 int main(int argc, char** argv)
6 {
7     int a=1, b=1000, c, q, t;
8     while (b-a>1)
9     {
10         c=(a+b)/2;
11         cout<<"press 0 if your number is greater than"<<c;
12         cin>>t;
13         if (t==0)
14             {a=c+1;}
15         else
16             {b=c;}
17     }
18 }
19
20 cout<<"press 0 if your number is "<<a;
21 cin>>q;
22 if(q==0)
23 { cout<<"your number is"<<a;
24 }
25 else
26 { cout<<"your number is"<<b;
27 }
28 return 0;
29
30
31 }
```

Output window (D:\mabani computer\hw\c++\ex10\test 10.exe):

```
press 0 if your number is greater than500 0
press 0 if your number is greater than750 1
press 0 if your number is greater than625 0
press 0 if your number is greater than688 0
press 0 if your number is greater than719 0
press 0 if your number is greater than735 1
press 0 if your number is greater than727 0
press 0 if your number is greater than731 0
press 0 if your number is greater than733 0
press 0 if your number is 734 1
your number is735
-----
Process exited after 64.83 seconds with return value 0
Press any key to continue . . .
```

Compiler: 13 Col: 19 Sel: 0 Lines: 31 Length: 555 Insert Done parsing 227 files in 0.39 seconds (582.05 files per second)

11. جمع ان عدد ورودی

The screenshot displays the Embarcadero Dev-C++ 6.3 IDE. The main window shows a C++ source file named `main.cpp` with the following code:

```
1 #include <iostream>
2 #include <math.h>
3 /* run this program using the console pauser or add your own getch, system("pause") or input loop */
4 using namespace std;
5 int main(int argc, char** argv)
6 {float s=0,x;
7 int n;
8 cout<<"n="; cin>>n;
9
10 while (n>0){
11     cout<<"x=";
12     cin>>x;
13     s+=x;
14     n--;
15 }
16 cout<<"s="<<s;
17
18     return 0;
19 }
```

The console window, titled `D:\mabani computer\hw\c++\ex11\ex11.exe`, shows the program's execution output:

```
n=8
x=2
x=6
x=3
x=45
x=36
x=254
x=6
x=26586
s=26938
-----
Process exited after 41.32 seconds with return value 0
Press any key to continue . . .
```

The status bar at the bottom indicates the current cursor position: Line: 7 Col: 1 Sel: 0 Lines: 19 Length: 336 Insert. A message on the right states: "Done parsing 227 files in 0.391 seconds (580.56 files per second)".

12. به توان رساندن دو عدد

The screenshot displays the Embarcadero Dev-C++ 6.3 IDE. The main window shows the source code for a C++ program named `main.cpp`. The code includes the `<iostream>` and `<math.h>` headers, uses the `std` namespace, and defines a `main` function that takes two arguments, `a` and `b`. It calculates the power of `a` to the `b` using `pow(a, b)` and prints the result. The console window shows the output of the program, which is `paie3` and `tavan6` followed by the calculated power `729`. The status bar at the bottom indicates that the program has been compiled successfully.

```
1 #include <iostream>
2 #include <math.h>
3 /* run this program using the console */
4 using namespace std;
5 int main(int argc, char** argv) {
6     float a,b,c;
7     cout<<"paie";
8     cin>>a;
9     cout<<"tavan";
10    cin>>b;
11    c=pow(a,b);
12    cout<<c;
13    return 0;
14 }
```

paie3
tavan6
729

Process exited after 2.857 seconds with return value 0
Press any key to continue . . .

Compiler Resources Compile Log Debug Find Results Console

Line: 10 Col: 12 Sel: 0 Lines: 14 Length: 305 Insert Done parsing 227 files in 0.375 seconds (605.33 files per second)