

The image shows a Windows desktop environment with a yellow taskbar. A green status bar at the top of the IDE window indicates "You are screen sharing" and provides a "Stop share" button. The IDE's menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status line shows "Line 6 Col 1" and "Insert Indent Tab Fill Unindent * E:11AM.C".

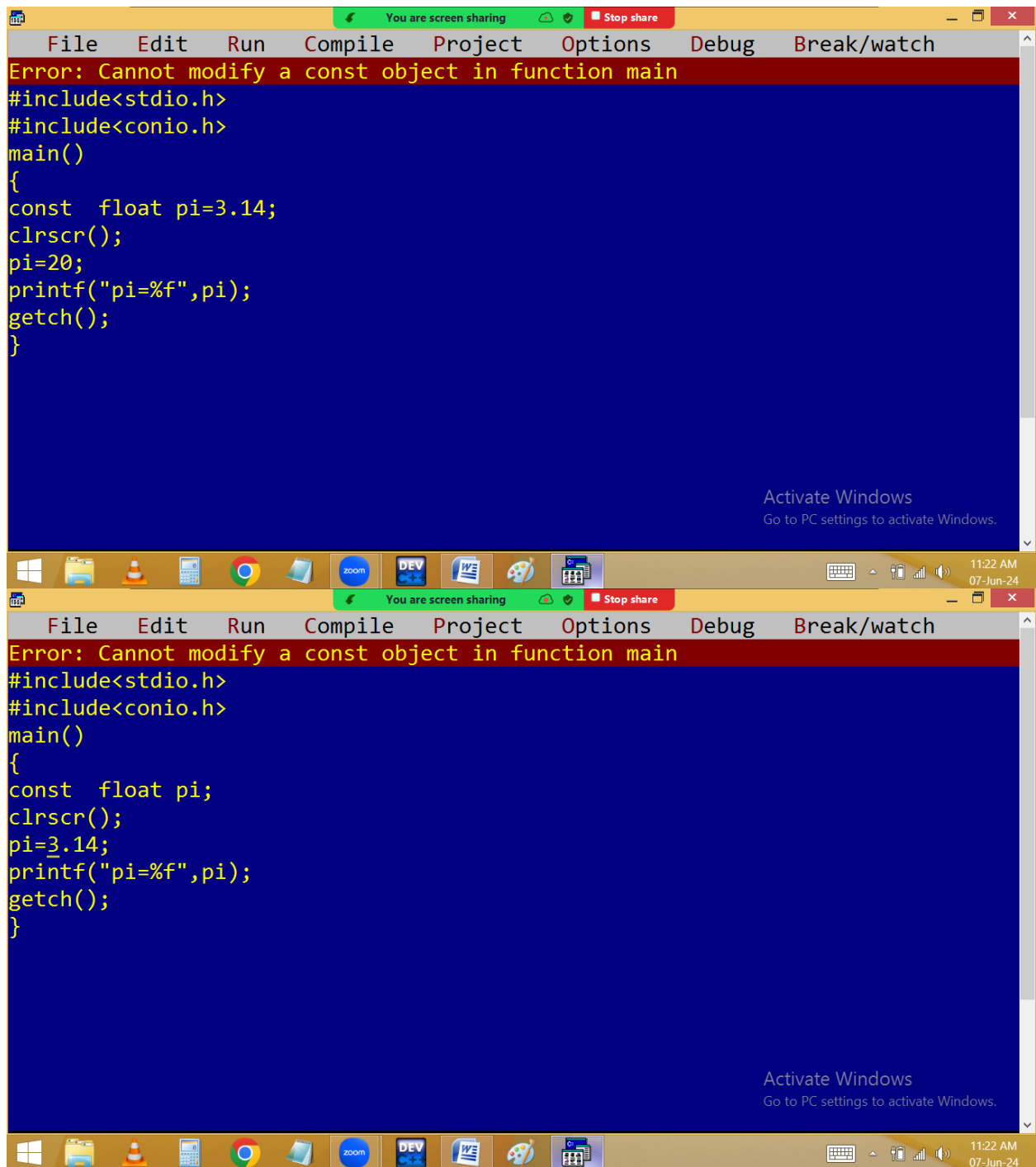
The code editor displays the following C program:

```
#include<stdio.h>
#include<conio.h>
main()
{
const float pi=3.14;
clrscr();
printf("pi=%f",pi);
getch();
}
```

The output window below the editor shows the result of the program's execution:

```
pi=3.140000
```

Both the code editor and the output window include an "Activate Windows" watermark with the text "Go to PC settings to activate Windows." The taskbar contains icons for various applications, including a file explorer, VLC media player, a calculator, Google Chrome, a folder, Zoom, DEV C++, Word, and a paint application. The system tray on the right shows the time as 11:22 AM on 07-Jun-24, along with icons for keyboard, volume, and network status.



Numerical constants:

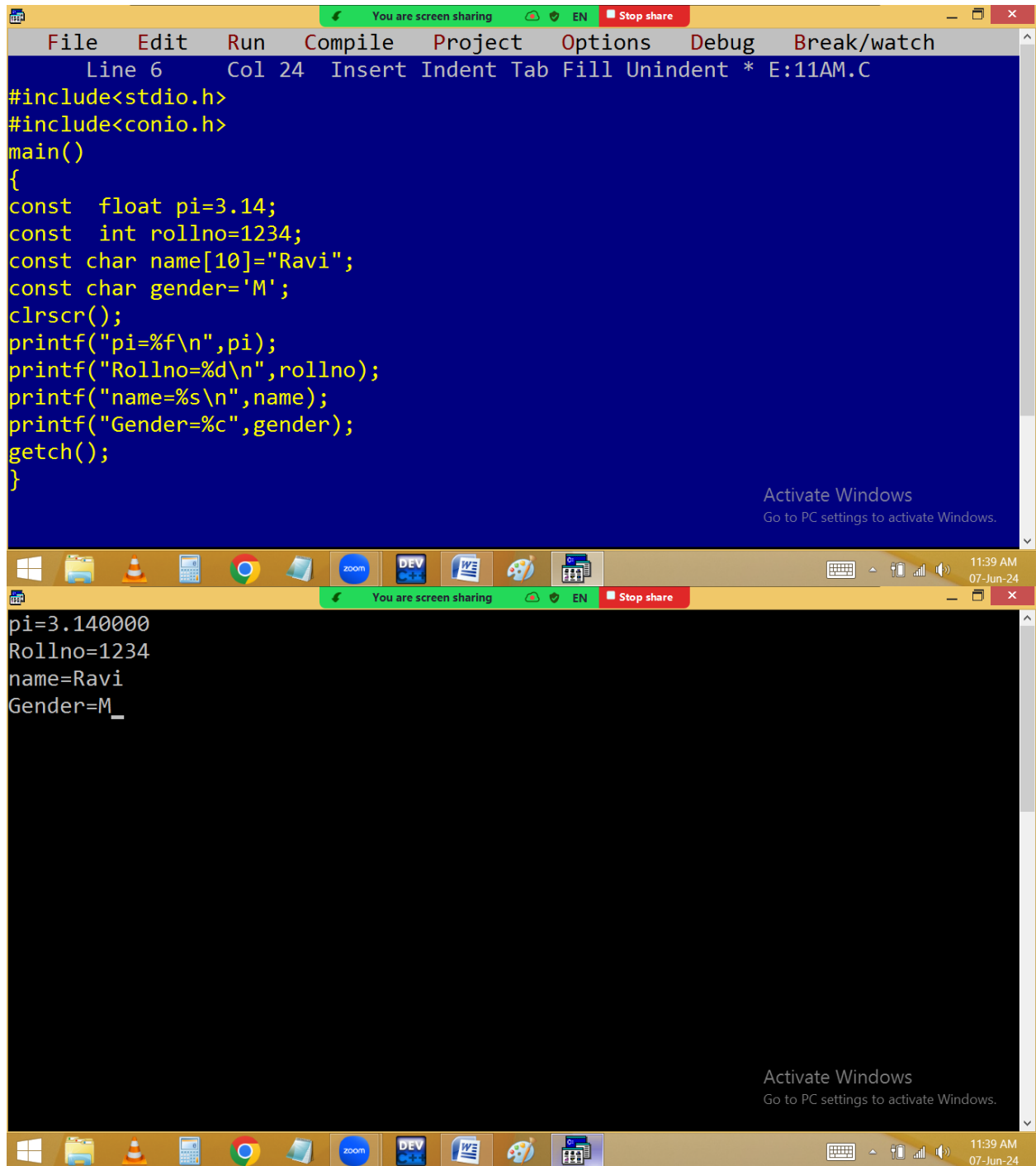
```
const int rollno = 1234;
```

```
const float pi = 3.14;
```

character constants:

char name[10]="Ravi"; string constant

char gender='M'; char constant



The image shows a screenshot of a Windows desktop with a code editor window and a terminal window. The code editor window has a menu bar with File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar shows 'Line 6 Col 24 Insert Indent Tab Fill Unindent * E:11AM.C'. The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
main()
{
    const float pi=3.14;
    const int rollno=1234;
    const char name[10]="Ravi";
    const char gender='M';
    clrscr();
    printf("pi=%f\n",pi);
    printf("Rollno=%d\n",rollno);
    printf("name=%s\n",name);
    printf("Gender=%c",gender);
    getch();
}
```

The terminal window shows the output of the program:

```
pi=3.140000
Rollno=1234
name=Ravi
Gender=M_
```

The desktop taskbar includes icons for Windows, File Explorer, VLC, Calculator, Chrome, a folder, Zoom, DEV, a document, a paint application, and a calendar. The system tray shows the time as 11:39 AM on 07-Jun-24. A watermark 'Activate Windows Go to PC settings to activate Windows.' is visible in the bottom right corner of both the code editor and terminal windows.

3. Identifiers:

Identifiers are nothing but names of variables, functions, files etc.

Example for variables:

`int a=10;` ==> a is used to identify the 10. hence a is an identifier

`int b=20;` ==> b is used to identify the 20. hence b is an identifier

a is used to store the value 10. i.e. a is a container and containers are called variables.

a and b are used to identify the variables. hence a and b are the names of variables.

Example for functions:

fun names - identifiers

`sum() - fun`

`{`

`..;`

`..;`

`}`

`div()`

`{`

`...;`

`...;`

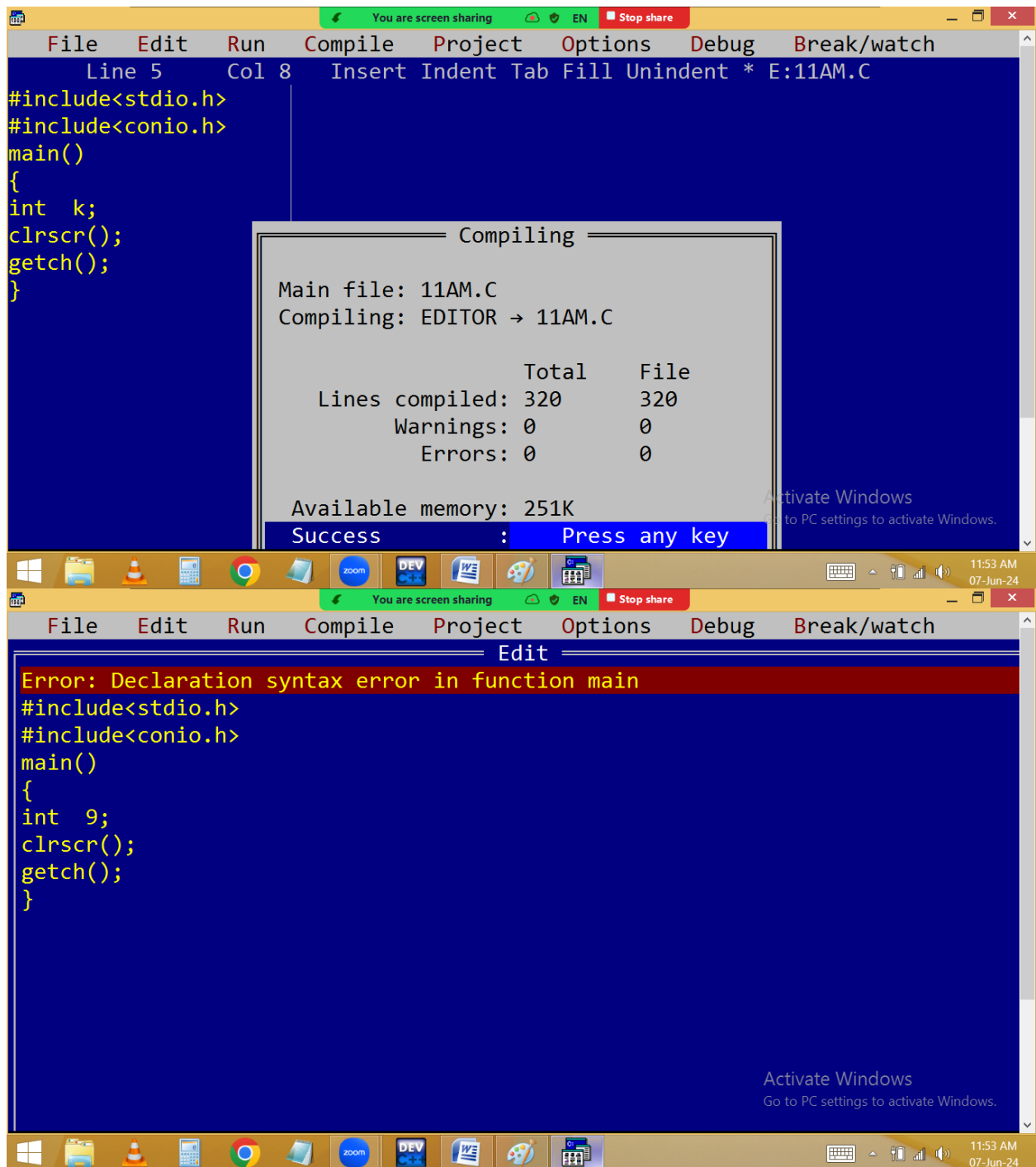
`}`

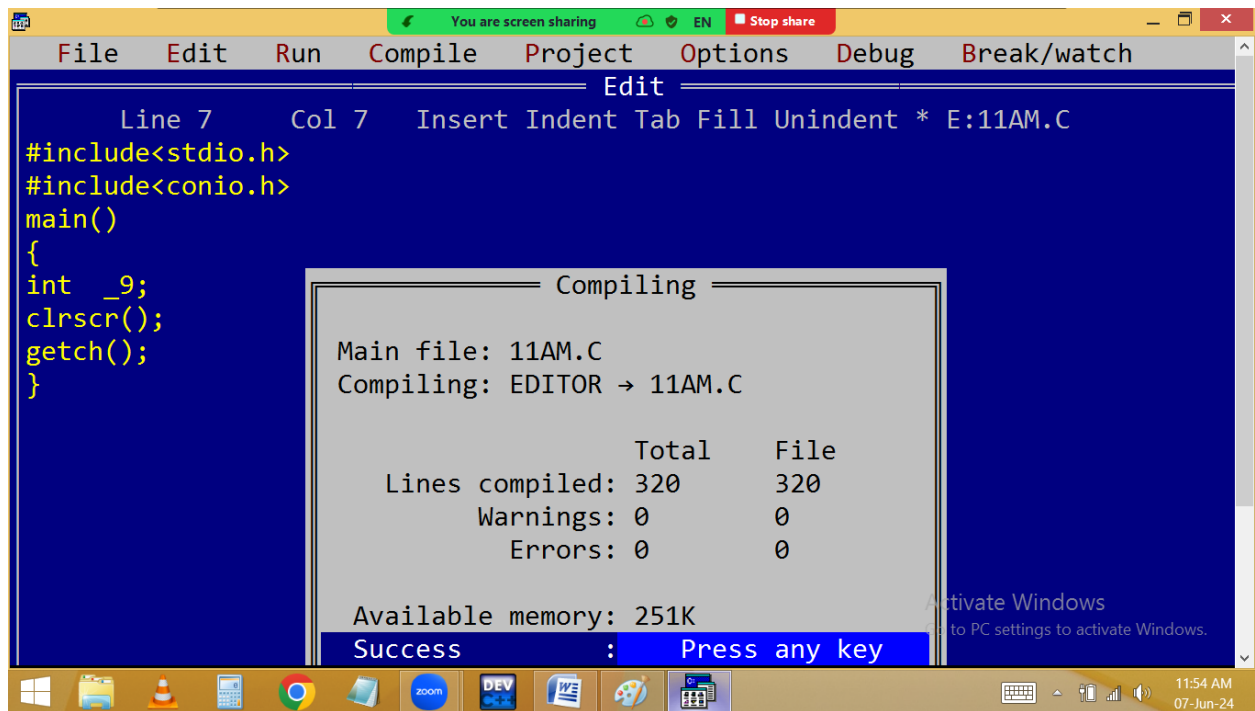
Example for files:

a.c, b.cpp, c.java, d.py,..

Identifier naming rules:

1. Name should have to start with alphabet or underscore only [_].





2. Numbers allowed but not at first position.

The image shows two screenshots of a C compiler IDE. The top screenshot displays a syntax error: "Error: Declaration syntax error in function main". The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
main()
{
int 9_9;
clrscr();
getch();
}
```

The bottom screenshot shows the same code after compilation. A "Compiling" dialog box is open, displaying the following information:

Main file: 11AM.C
Compiling: EDITOR → 11AM.C

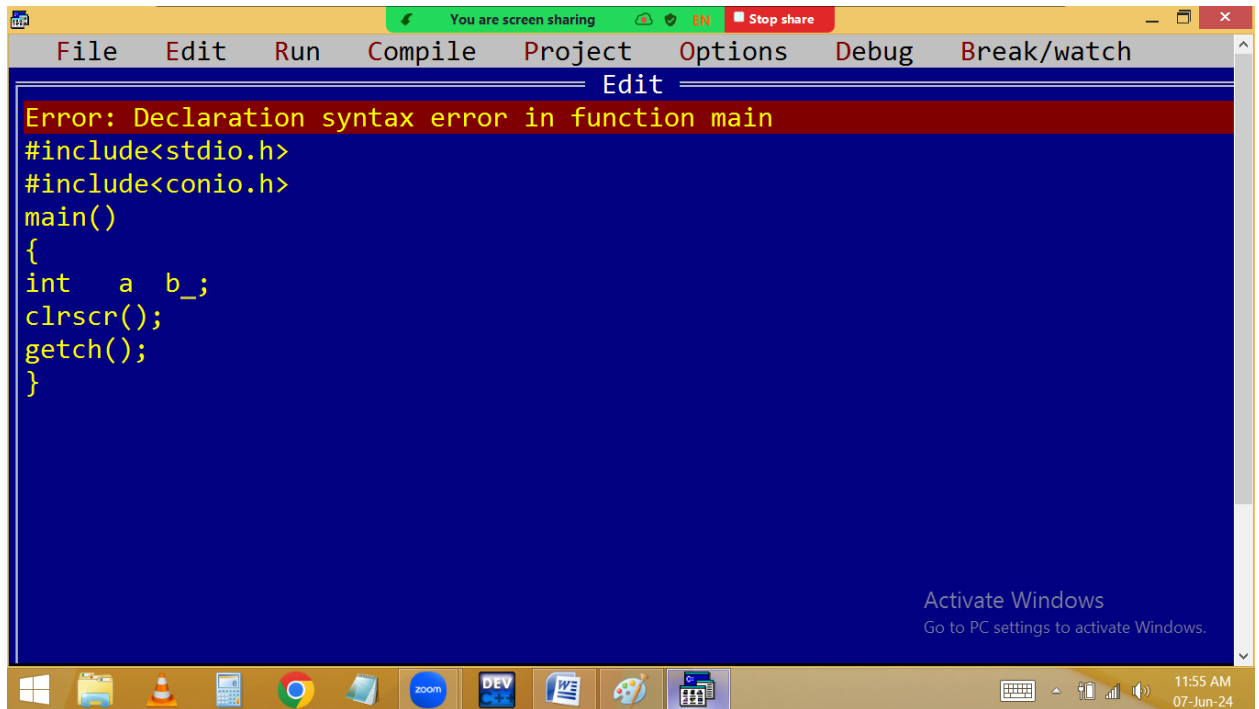
	Total	File
Lines compiled:	320	320
Warnings:	0	0
Errors:	0	0

Available memory: 251K
Success : Press any key

The code in the editor for the bottom screenshot is:

```
Line 6 Col 11 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int _9_9 ;
clrscr();
getch();
}
```

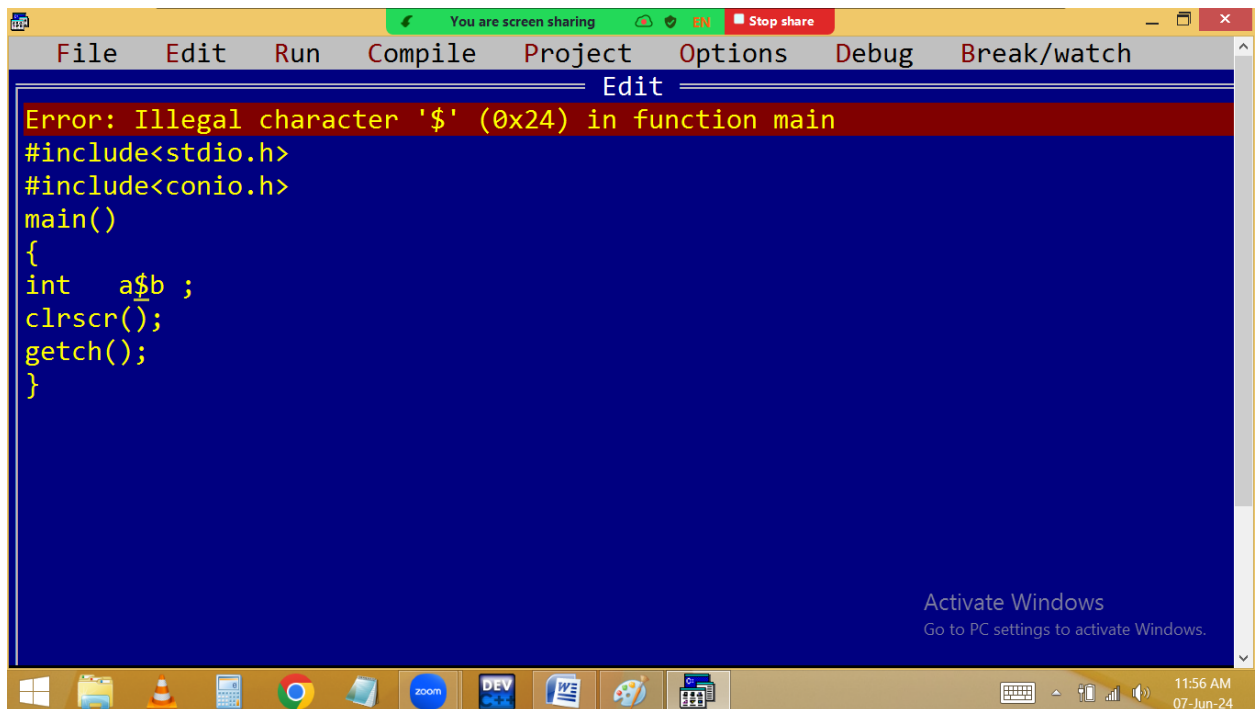
3. Spaces not allowed.



```
File Edit Run Compile Project Options Debug Break/watch
Edit
Error: Declaration syntax error in function main
#include<stdio.h>
#include<conio.h>
main()
{
int  a  b_;
clrscr();
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

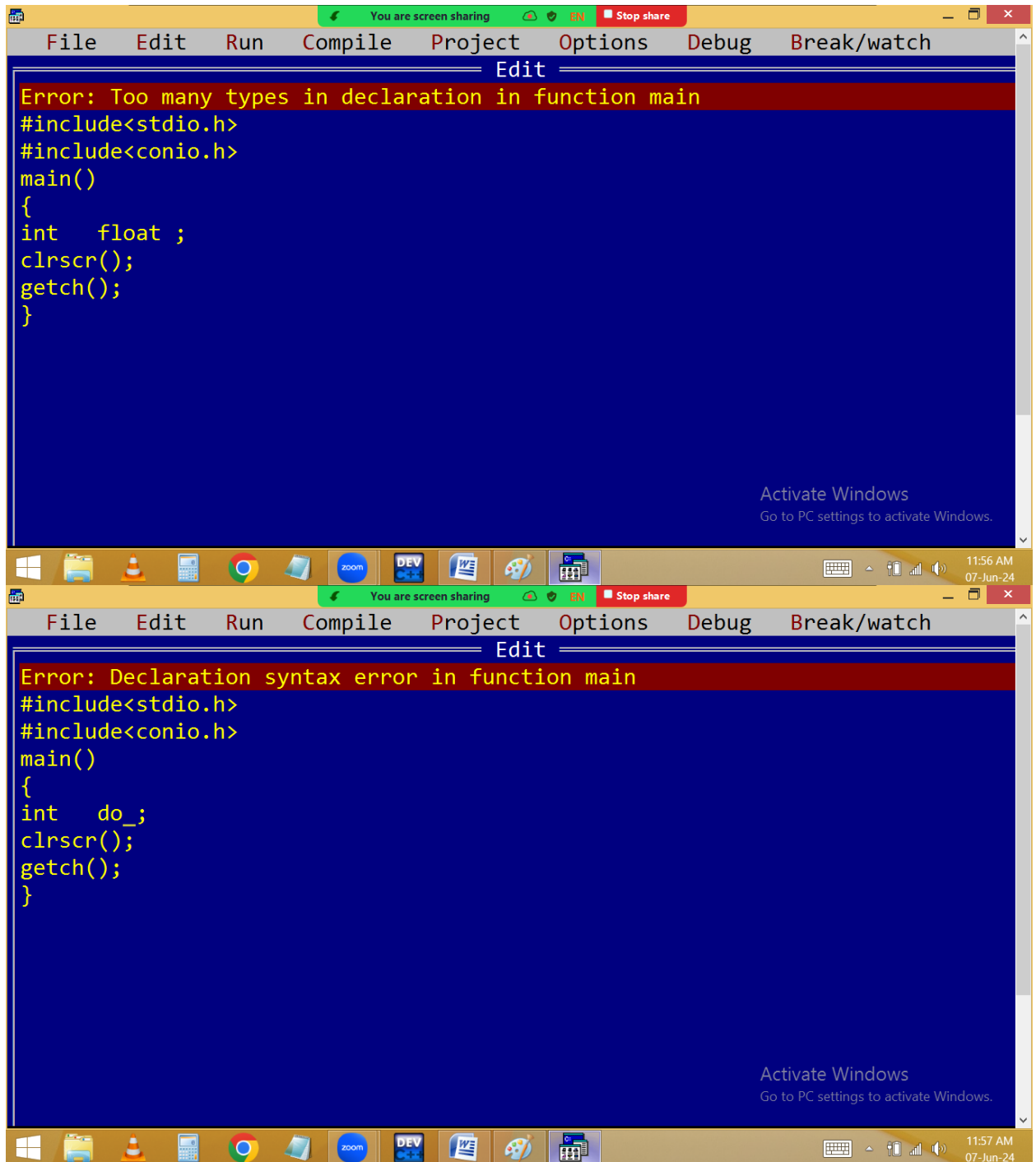
4. No special char except underscore.



```
File Edit Run Compile Project Options Debug Break/watch
Edit
Error: Illegal character '$' (0x24) in function main
#include<stdio.h>
#include<conio.h>
main()
{
int  a$b ;
clrscr();
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

5. Keywords not allowed.



6. Identifiers are case sensitive i.e. lower and upper are different.

The screenshot shows a Turbo C++ IDE window with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a toolbar. The main editing area has a blue background and contains the following C code:

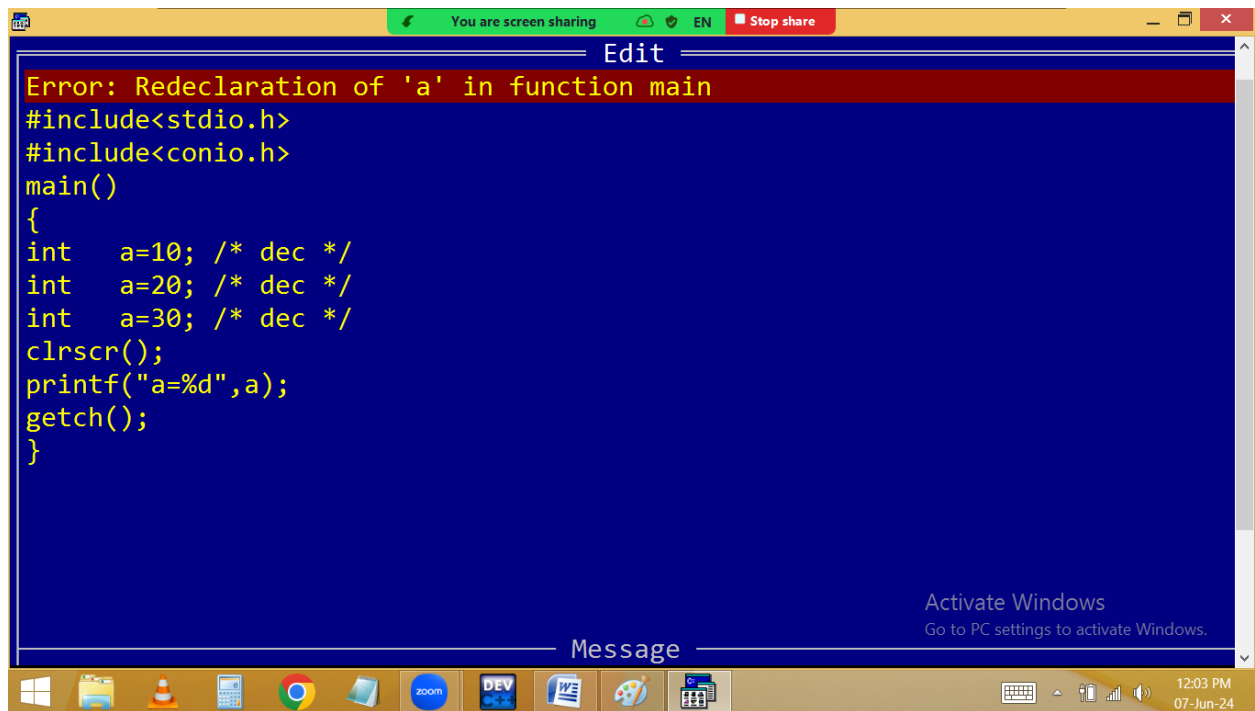
```
Line 8   Col 26   Insert  Indent  Tab  Fill  Unindent  * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
  int    a=10;
  int    A=20;
  clrscr();
  printf("a=%d, A=%d",a,A);_
  getch();
}
```

Below the code editor, the output window shows the result of the program execution:

```
a=10, A=20
```

The Windows taskbar at the bottom shows the time as 11:58 AM on 07-Jun-24. A watermark "Activate Windows" is visible in the bottom right corner of the IDE window.

7. Duplicate names are not allowed in same function or block {}.

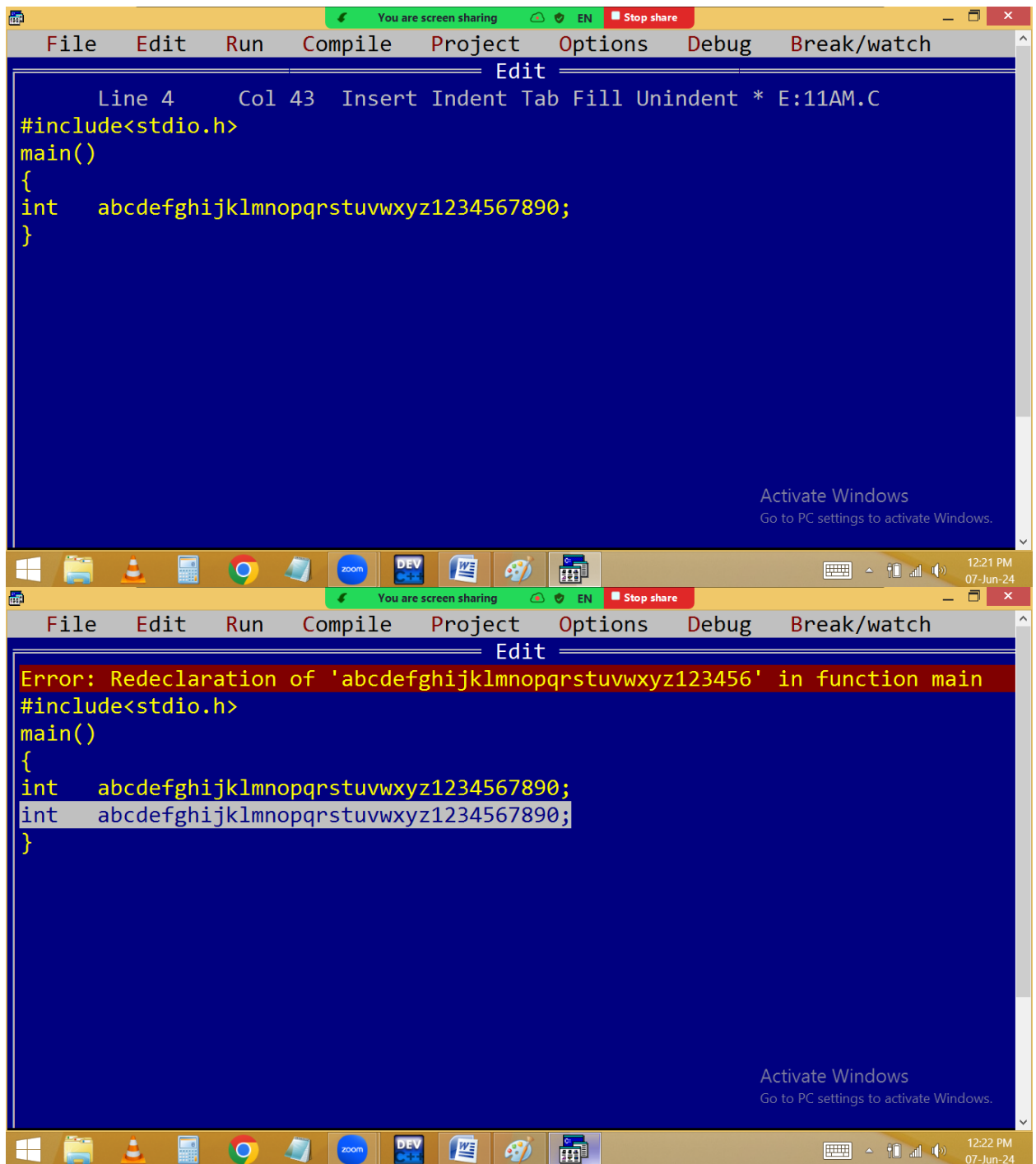


The screenshot shows a Turbo C++ IDE window with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a toolbar. The main editing area has a blue background and displays the following C code:

```
Line 13   Col 8   Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
void show()
{
int a=100;
printf("a=%d",a);
}
main()
{
int a=10; /* dec */
clrscr();
printf("a=%d",a);
show();_
getch();
}
```

Below the code editor is a black console window. The first line of the console output is "a=10a=100". The Windows taskbar at the bottom shows various application icons and the system clock indicating 12:19 PM on 07-Jun-24. A green status bar at the top of the IDE window indicates "You are screen sharing".

8. Name may contain up to 32 characters and excess characters ignored by the compiler.



The image shows a two-part screenshot of a C compiler IDE. The top part shows a compilation error: "Error: Redeclaration of 'abcdefghijklmnopqrstuvwxyz123456' in function main". The code in the editor is as follows:

```
#include<stdio.h>
main()
{
int   abcdefghijklmnopqrstuvwxyz1234567890;
int   abcdefghijklmnopqrstuvwxyz123456;
}
```

The bottom part shows the same code after the error has been fixed. The second integer declaration has been changed to "abcdefghijklmnopqrstuvwxyz12345". A "Compiling" window is open, showing the following output:

```
Compiling
Main file: 11AM.C
Compiling: EDITOR -> 11AM.C

Total      File
Lines compiled: 236    236
Warnings: 0           0
Errors: 0             0

Available memory: 250K
Success : Press any key
```

4. data types:

Data type determines the type of value we are going to store in our computer. To store anything in our computer, we should

have to allocate the memory. This memory allocation is depended on the data type we are using.

Data type determines the properties such as

1. No of bytes
2. Range
3. Type of value

In C language we are having 3 **basic** data types

- 1. Int – To store non-decimal numbers**
- 2. Float – To store decimal numbers**
- 3. Char – To stores alphabets, numbers and special char**

Total data types are divided into 3 types.

- 1. Primitive data types**
- 2. Derived data types**
- 3. User defined data types**

PRIMITIVE DATA TYPES:

These are the regular data types we are using in our c programs.

Data type	Bytes	Conversion Character / format specifier	Storage Range

int / signed int / short int	2	%d	-32768 to +32767
unsigned int	2	%u	0 to 65535
long int	4	%ld	-2147483648 to 2147483647
unsigned long int	4	%lu	0 to 4294967295
float	4	%f	$3.4 * 10^{-38}$ to $3.4 * 10^{+38}$
double	8	%lf	$1.7 * 10^{-308}$ to $1.7 * 10^{+308}$
long double	10	%Lf	$3.4 * 10^{-4932}$ to $1.1 * 10^{+4932}$
char	1	%c	1 character Signed char [-128 to +127] Unsigned char [0 to 255]
char[10] (STRING)	10	%s	9 char + 1 null char
void [empty data type]			nothing

DERIVED DATA TYPES:

They are derived from primitive data types.

- 1. Array [non-primitive]**
- 2. Pointer**
- 3. Function**

USER DEFINED DATA TYPES:

These are the data types created by the user.

1. structure
2. union
3. enum