

C++ Programming Printing

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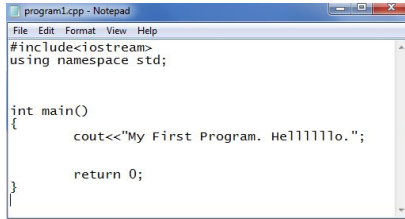
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Recall C++ Program Life Cycle

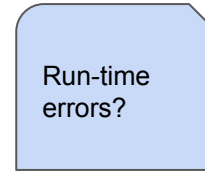
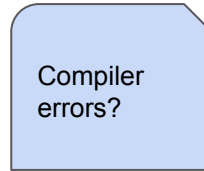
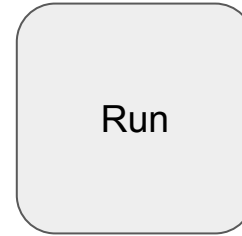
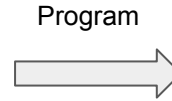
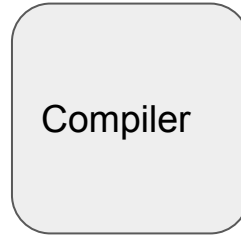
- 1) **Write** the Code
- 2) **Compile** it
 - Compiler: Is there any **compile errors**? If no, Generates a program
- 4) **Run** the program(executable):
 - Any run-time errors? If yes, stop.
- Errors types:
 - Compile error: You violated the language syntax rules!
 - Run time error: Good syntax, but program crashes due to error during running
 - Example: Divide by zero.
 - *Examples for them in the next lecture*

Recall C++ Program Life Cycle

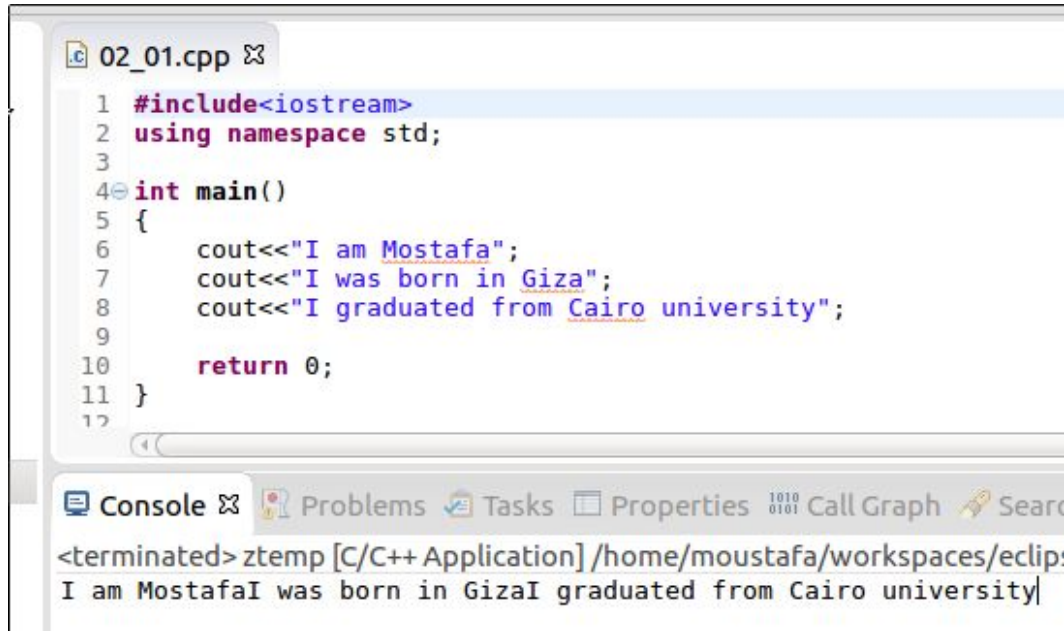


```
program1.cpp - Notepad
File Edit Format View Help
#include<iostream>
using namespace std;

int main()
{
    cout<<"My First Program. Helloooooo.";
    return 0;
}
```



Let's print more messages (aka **strings**)!



The screenshot shows an IDE with a C++ file named 02_01.cpp. The code defines a main function that prints three lines of text using cout. The output window at the bottom shows the result of the program execution, which is a single line of text containing all three printed messages concatenated together.

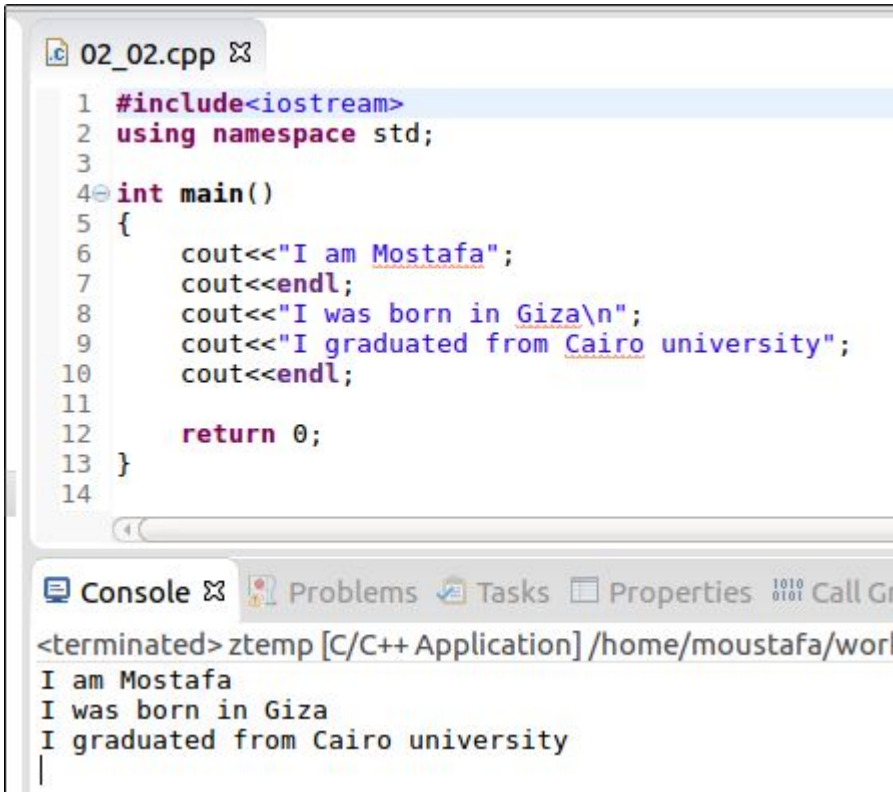
```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"I am Mostafa";
7     cout<<"I was born in Giza";
8     cout<<"I graduated from Cairo university";
9
10    return 0;
11 }
12
```

Console Output:

```
<terminated> ztemp [C/C++ Application] /home/moustafa/workspaces/eclip:
I am MostafaI was born in GizaI graduated from Cairo university|
```

- What is wrong in **output**?
- We wanna program prints them on **3 lines**
- 2 solutions to add **new line**
 - Use endl
 - Or \n

Fixing the printing



The screenshot shows a C++ IDE with a file named 02_02.cpp. The code defines a main function that uses cout to print three lines of text, each followed by endl. The output window at the bottom shows the program's execution, displaying the three lines of text on separate lines, confirming that endl works as intended.

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"I am Mostafa";
7     cout<<endl;
8     cout<<"I was born in Giza\n";
9     cout<<"I graduated from Cairo university";
10    cout<<endl;
11
12    return 0;
13 }
14
```

Console

```
<terminated> ztemp [C/C++ Application] /home/moustafa/world
I am Mostafa
I was born in Giza
I graduated from Cairo university
|
```

- Now we give command to print a new line
- Once it sees endl command, it gives a new line
- Try to act as a compiler
 - Follow command by command
 - Execute it

Merge print commands using <<

```
02_03.cpp
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"I am "<<"Mostafa"<<endl<<"I was born in Giza\n";
7     cout<<"I graduated from Cairo university";
8     cout<<endl;
9
10    return 0;
11 }
12
```

Console

```
<terminated> ztemp [C/C++ Application] /home/moustafa/workspaces/eclipse
I am Mostafa
I was born in Giza
I graduated from Cairo university
```

- We can actually have several print commands
 - Each one needs <<
 - Use Cout once in line begin

More printings

02_04.cpp

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"I am Mostafa"<<endl<<"I was born in Giza"<<endl<<"I graduated from Cairo university"<<endl;
7
8     return 0;
9 }
10
```

Console Problems Tasks Properties Call Graph Search

<terminated> ztemp [C/C++ Application] /home/moustafa/workspaces/eclipse_cpp/ztemp/Debug/ztemp (3/1/20, 10:06 PM)

```
I am Mostafa
I was born in Giza
I graduated from Cairo university
|
```

More printings

```
02_05.cpp
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"I am Mostafa"
7         <<endl<<"I was born in Giza"
8         <<endl<<"I graduated from Cairo university"
9         <<endl;
10
11     return 0;
12 }
```

Console Problems Tasks Properties Call Graph

```
<terminated> ztemp [C/C++ Application] /home/moustafa/workspace
I am Mostafa
I was born in Giza
I graduated from Cairo university
|
```

- Actually same exactly command as last time
- We just split on several lines

More printings

02_06.cpp

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"I am Mostafa\nI was born in Giza\nI graduated from Cairo university\n";
7
8     return 0;
9 }
10
```

Console Problems Tasks Properties 1010 0101 Call Graph Search

<terminated> ztemp [C/C++ Application] /home/moustafa/workspaces/eclipse_cpp/ztemp/Debug/ztemp (

I am Mostafa

I was born in Giza

I graduated from Cairo university

Your turn

- Try the codes that we studied today
 - Start with using my provided codes
 - Play with them
 - Rewrite from scratch your own printings

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”