

# Programming 4kids Printing

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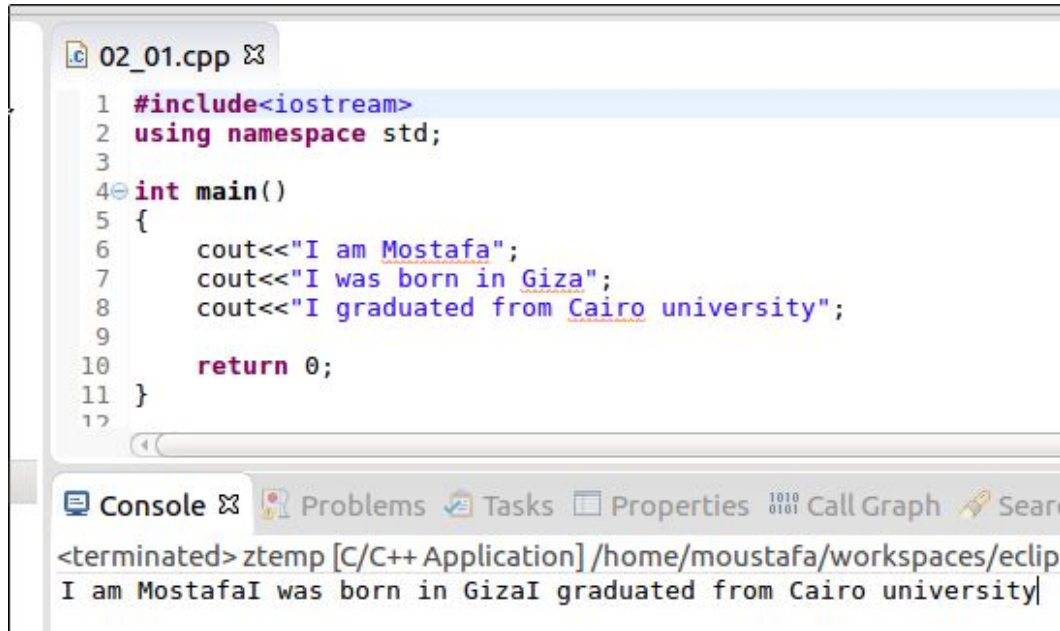
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# Let's print more messages (aka **strings**)!



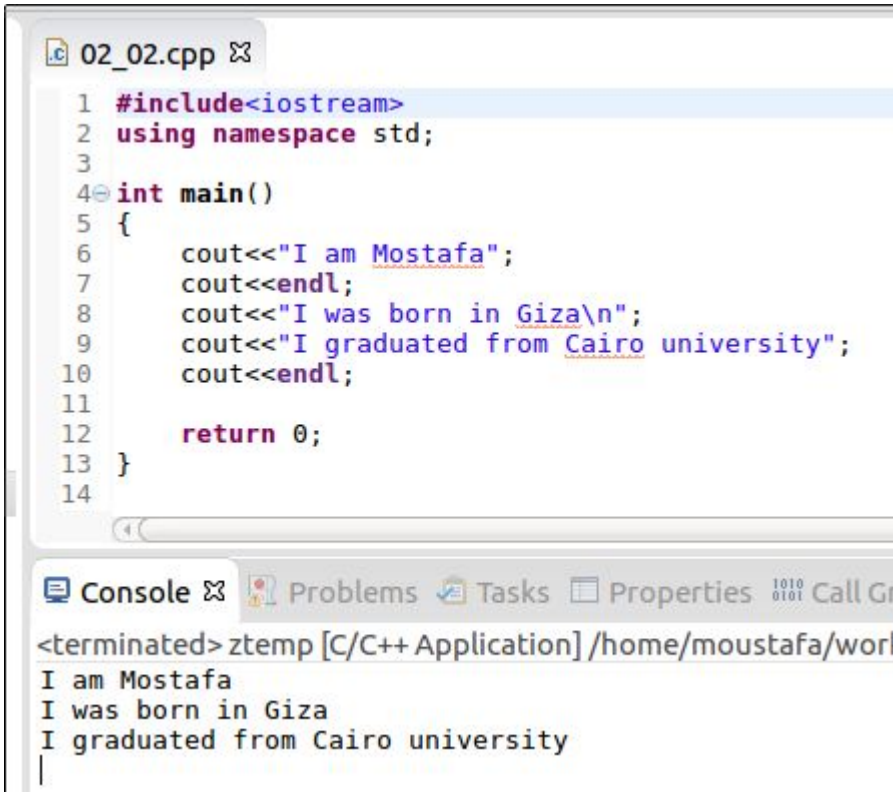
The screenshot shows an IDE with a C++ file named 02\_01.cpp. The code defines a main function that prints three lines of text using cout. The output window at the bottom shows the result of the program execution, which is the concatenation of the three lines without any line breaks.

```
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?
- We wanna tell compute to print them on **3 lines**
- 2 solutions
  - 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

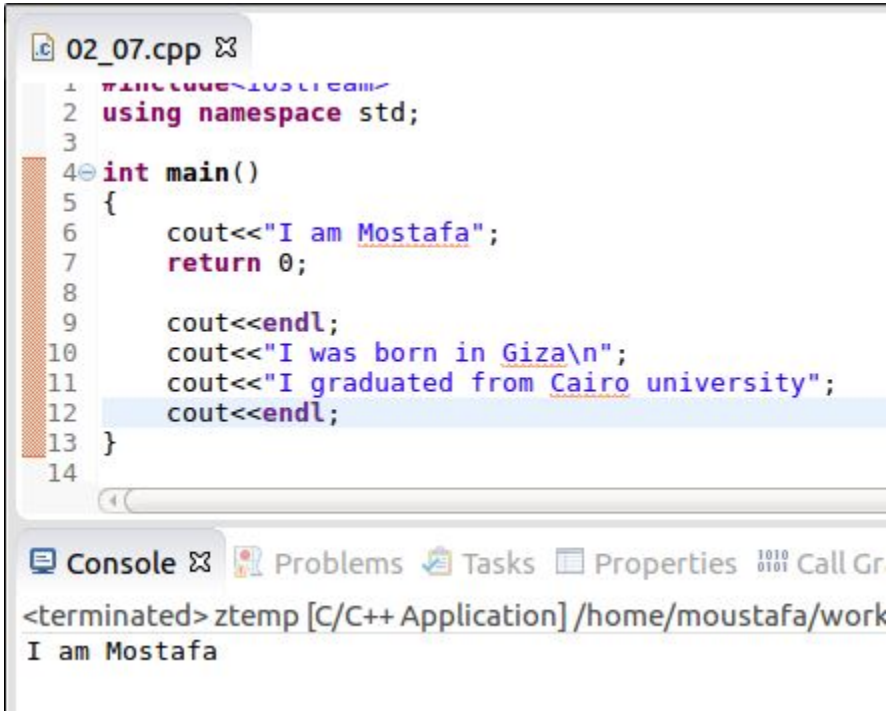
<terminated> ztemp [C/C++ Application] /home/moustafa/workspaces/eclipse\_cpp/ztemp/Debug/ztemp (

I am Mostafa

I was born in Giza

I graduated from Cairo university

# Don't write after return line!



```
02_07.cpp
1 #include <iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"I am Mostafa";
7     return 0;
8
9     cout<<endl;
10    cout<<"I was born in Giza\n";
11    cout<<"I graduated from Cairo university";
12    cout<<endl;
13 }
14
```

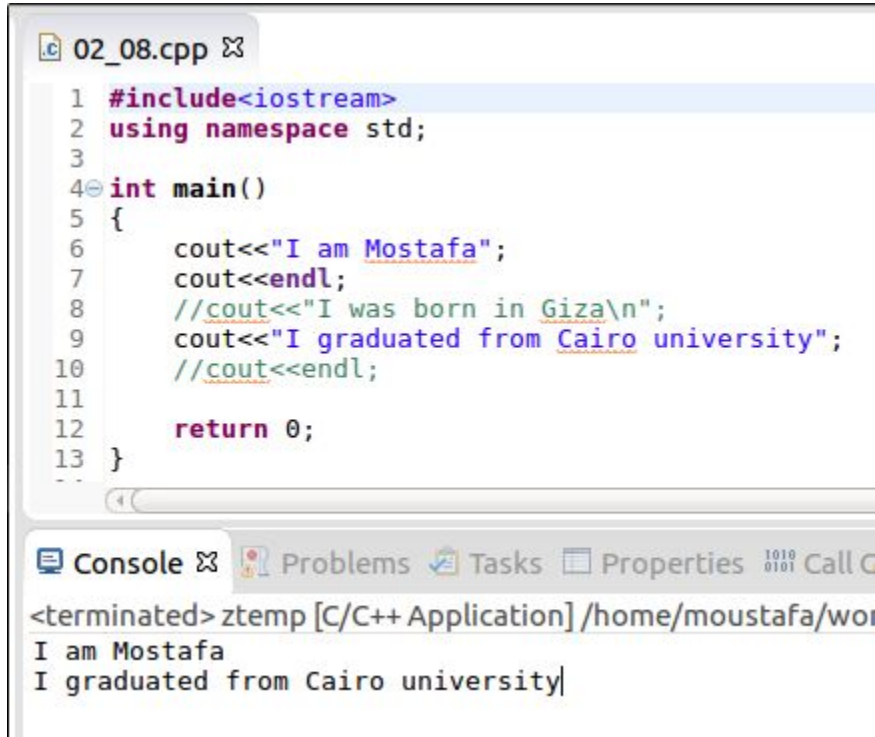
Console Problems Tasks Properties 1010 0101 Call Gr

<terminated> ztemp [C/C++ Application] /home/moustafa/work  
I am Mostafa

- Why other lines not printed?
- Return 0 tells compiler we are done.
- Lines after it are **ignored!**
- Be careful!



# Code comments: Using //



The screenshot shows a C++ IDE with a file named 02\_08.cpp. The code defines a main function that prints "I am Mostafa" and "I graduated from Cairo university". It includes a commented-out line for "I was born in Giza". The console output shows the executed lines.

```
02_08.cpp
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 }
```

Console Output:

```
<terminated> ztemp [C/C++ Application] /home/moustafa/wor
I am Mostafa
I graduated from Cairo university|
```

- Any thing in same line after // will not be executed
- So comment what you want when you need so

# Code comments: Using /\* \*/

```
02_09.cpp
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"I am Mostafa";
7     /*
8     cout<<endl;
9     cout<<"I was born in Giza\n";
10    cout<<"I graduated from Cairo university";
11    cout<<endl;
12    */
13
14    return 0;
15 }
```

Console

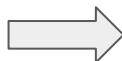
<terminated> ztemp [C/C++ Application] /home/moustafa/work  
I am Mostafa

- If you have many consecutive lines and won't compiler ignore, put them between /\* \*/

# Numbers

02\_10.cpp

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<1<<"\n";
7     cout<<12<<"\n";
8     cout<<123<<" is a number\n";
9     cout<<"123"<<" is NOT a number\n";
10    cout<<endl;
11
12    cout<<15.7<<"\n";
13    cout<<-12.52<<"\n";
14    cout<<endl;
15
16    cout<<1234<<"\n";
17    cout<<4321<<"\n\n";
18
19    cout<<43211234<<"\n";
20    cout<<4321<<1234<<"\n";
21
22    cout<<"\nMy luck number is: "<<17<<"\n";
23
24    return 0;
25 }
```



Problems Tasks Console Properties

<terminated> ztemp [C/C++ Application] /home/m

```
1
12
123 is a number
123 is NOT a number

15.7
-12.52

1234
4321

43211234
43211234

My luck number is: 17
|
```

# Math on numbers!

02\_11.cpp

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<1<<"\n";
7     cout<<1+2<<"\n";
8     cout<<1+2+3<<"\n";
9     cout<<1+2+3+4<<"\n";
10    cout<<"1+2+3+4"<<"\n";
11    cout<<"1+2+3+4="<<1+2+3+4<<"\n\n";
12
13    cout<<1+2+3+4-10<<"\n";
14    cout<<17-10<<"\n\n";
15
16    cout<<"2*3*4 = "<<2*3*4<<"\n";
17    cout<<"12/2 = "<<12/2<<"\n";
18    cout<<"12/2/3 = "<<12/2/3<<"\n\n";
19
20    cout<<"6/2 = "<<6/2<<"\n";
21    cout<<"7/2 = "<<7/2<<"\n";
22    cout<<"7.0/2.0 = "<<7.0/2.0<<"\n\n";
23
24    cout<<10*10*10*10*10*10*10*10*10<<"\n";
25    cout<<10*10*10*10*10*10*10*10*10<<"\n";
26
27    return 0;
28 }
```



Problems



Tasks



Console



Pr

<terminated> ztemp [C/C++ Application] /ho

1

3

6

10

1+2+3+4

1+2+3+4=10

0

7

7

7

7

2\*3\*4 = 24

12/2 = 6

12/2/3 = 2

6/2 = 3

7/2 = 3

7.0/2.0 = 3.5

1000000000

1410065408

# Homework 1#: Guess the output

01\_12\_printing.cpp

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout<<"\n\nGuess the output\n---\n";
7     cout<<10+20-5<<endl;
8
9     cout<<"14/2"<<"\n";
10    cout<<17-10<<"\n";
11    cout<<"endl";
12    cout<<"\nPractice makes perfect";
13
14
15    return 0;
16
17    cout<<"\n\nBye\n\n";
18 }
19
```

- Pass over the code line by line
- Execute the line
- What is the output of this code?

# Homework 2#: Write code to print the following

```
Problems Tasks Console
<terminated> ztemp [C/C++ Application]
*
* *
* * *
* * * *
* * * * *
```

```
Problems Tasks Console
<terminated> ztemp [C/C++ Application]
      *
     * * *
    * * * *
   * * * * *
  * * * * *
 * * * * *
* * * * *
```

- Write a code to each output

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

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

```
      1
    1 1
  1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
```

# Studying tips

- Materials
  - Study them 1-3 times
  - If you still can't understand, either skip or see other guys on youtube
  - Code:
    - Rewrite every code by yourself (on [github](#))
    - If it doesn't work, compare with my github and learn mistakes
    - Do your own changes
- Homework
  - Think 15-30 minutes. More is better
  - If you can't solve, read my answer in github
  - If you can't understand my answer, watch my solution, if recorded
- *Better watch the third video also first before coding this one (about errors)*

تم بحمد الله

علمكم الله ما ينفعكم

ونفعكم بما تعلمتم

وزادكم علماً