C++ Programming Errors!

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Compiler Error: Missing semicolon

```cpp
1  #include<iostream>
2  using namespace std;
3
4  int main()
5  {
6      cout<<"I am Mostafa"
7
8      return 0;
9  }
10
```

```
Problems  Tasks  Console ☒  Properties  Call Graph  Search

CDT Build Console [ztemp]
21:25:27 **** Auto Build of configuration Debug for project ztemp *
make all
Building file: ../01_07_printing.cpp
Invoking: Cross G++ Compiler
g++ -O0 -g3 -Wall -c -fmessage-length=0 -std=c++11 -MMD -MP -MF"01_
../01_07_printing.cpp: In function 'int main()':
../01_07_printing.cpp:8:2: error: expected ';' before 'return'
   return 0;
   ^
subdir.mk:18: recipe for target '01_07_printing.o' failed
make: *** [01_07_printing.o] Error 1

21:25:28 Build Finished (took 560ms)
```

<< be careful

```
1  #include<iostream>
2  using namespace std;
3
4⊖ int main()
5  {
6      cout<<<<"I am mostafa "< <"saad\n";
7
8      return 0;
9  }
10
```

Console ⊠   Problems   Tasks   Properties   Call Graph   Search

CDT Build Console [ztemp]
```
19:13:01 **** Incremental Build of configuration Debug for project ztemp ****
make all
Building file: ../02_11.cpp
Invoking: Cross G++ Compiler
g++ -O0 -g3 -Wall -c -fmessage-length=0 -std=c++11 -MMD -MP -MF"02_11.d" -MT"02_1
../02_11.cpp: In function 'int main()':
../02_11.cpp:6:8: error: expected primary-expression before '<<' token
  cout<<<<"I am mostafa "< <"saad\n";
        ^
../02_11.cpp:6:27: error: expected primary-expression before '<' token
  cout<<<<"I am mostafa "< <"saad\n";
                           ^
subdir.mk:18: recipe for target '02_11.o' failed
make: *** [02_11.o] Error 1

19:13:01 Build Finished (took 613ms)
```

- **<<**
- **NOT**
  - <<<
  - <<<<
  - < <
  - < <
  - >>

Compiler Error: Missing double quote char

```cpp
1  #include<iostream>
2  using namespace std;
3
4  int main()
5  {
6      cout<<"I am Mostafa;
7
8      return 0;
9  }
10
```

Problems Tasks **Console** Properties Call Graph Search

CDT Build Console [ztemp]
```
21:26:40 **** Auto Build of configuration Debug for project ztemp ****
make all
Building file: ../01_07_printing.cpp
Invoking: Cross G++ Compiler
g++ -O0 -g3 -Wall -c -fmessage-length=0 -std=c++11 -MMD -MP -MF"01_07_printing.
../01_07_printing.cpp:6:8: warning: missing terminating " character
  cout<<"I am Mostafa;
       ^
../01_07_printing.cpp:6:2: error: missing terminating " character
  cout<<"I am Mostafa;
  ^
../01_07_printing.cpp: In function 'int main()':
../01_07_printing.cpp:8:2: error: expected primary-expression before 'return'
  return 0;
  ^
make: *** [01_07_printing.o] Error 1
subdir.mk:18: recipe for target '01_07_printing.o' failed

21:26:40 Build Finished (took 562ms)
```
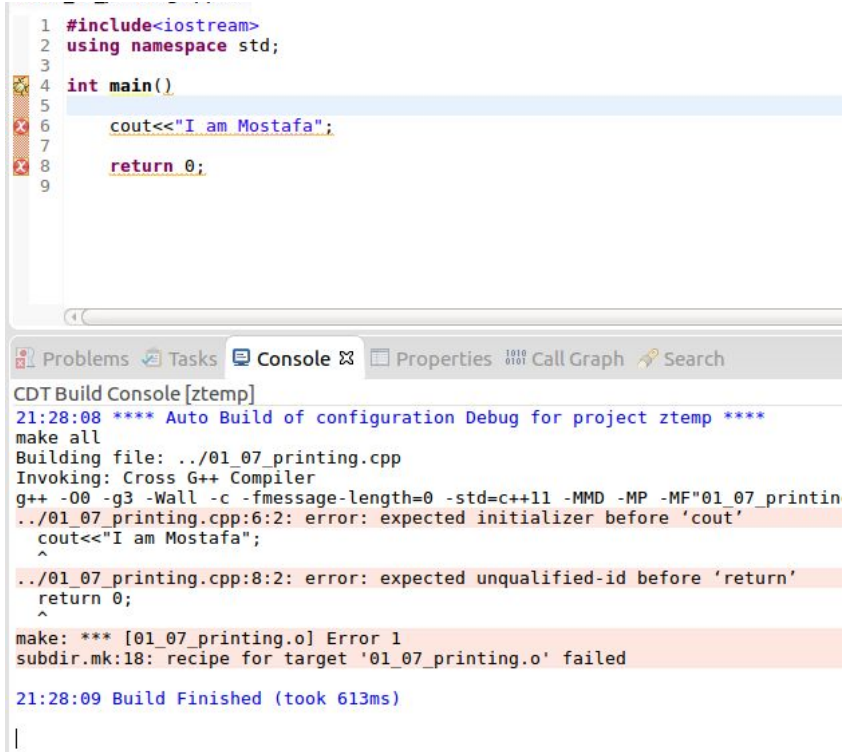
Compiler Error: Missing the braces {   }

```
1  #include<iostream>
2  using namespace std;
3
4  int main()
5
6      cout<<"I am Mostafa";
7
8      return 0;
9
```

```
Problems  Tasks  Console ⊠  Properties  Call Graph  Search
CDT Build Console [ztemp]
21:28:08 **** Auto Build of configuration Debug for project ztemp ****
make all
Building file: ../01_07_printing.cpp
Invoking: Cross G++ Compiler
g++ -O0 -g3 -Wall -c -fmessage-length=0 -std=c++11 -MMD -MP -MF"01_07_printin
../01_07_printing.cpp:6:2: error: expected initializer before 'cout'
  cout<<"I am Mostafa";
  ^
../01_07_printing.cpp:8:2: error: expected unqualified-id before 'return'
  return 0;
  ^
make: *** [01_07_printing.o] Error 1
subdir.mk:18: recipe for target '01_07_printing.o' failed

21:28:09 Build Finished (took 613ms)
```

Compiler Error: Missing #include<iostream>

Compiler Error: Where is main function?

```cpp
1  #include<iostream>
2  using namespace std;
3
4  int MAIN()
5  {
6      cout<<"I am Mostafa";
7
8      return 0;
9  }
10
```

Problems Tasks Console ☒ Properties Call Graph Search

CDT Build Console [ztemp]
```
07:59:59 **** Auto Build of configuration Debug for project ztemp ****
make all
Building file: ../01_07_printing.cpp
Invoking: Cross G++ Compiler
g++ -O0 -g3 -Wall -c -fmessage-length=0 -std=c++11 -MMD -MP -MF"01_07_printing.d" -MT"01_07_prin
Finished building: ../01_07_printing.cpp

Building target: ztemp
Invoking: Cross G++ Linker
g++  -o "ztemp"  ./01_07_printing.o
/usr/lib/gcc/x86_64-linux-gnu/5/../../../x86_64-linux-gnu/crt1.o: In function `_start':
(.text+0x20): undefined reference to `main'
collect2: error: ld returned 1 exit status
makefile:44: recipe for target 'ztemp' failed
make: *** [ztemp] Error 1

08:00:00 Build Finished (took 663ms)
```

- You must give main function
- But we have main?
- NO. C++ is **character sensitive**
- It must be main, not MAIN or Main or mAin or maiN

Compiler Error: Never print outside this way

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

Problems Tasks **Console** Properties Call Graph Search

CDT Build Console [ztemp]

```
08:09:15 **** Auto Build of configuration Debug for project ztemp ***
make all
Building file: ../01_07_printing.cpp
Invoking: Cross G++ Compiler
g++ -O0 -g3 -Wall -c -fmessage-length=0 -std=c++11 -MMD -MP -MF"01_07
../01_07_printing.cpp:4:1: error: 'cout' does not name a type
 cout<<"I am Mostafa";
 ^
subdir.mk:18: recipe for target '01_07_printing.o' failed
make: *** [01_07_printing.o] Error 1

08:09:15 Build Finished (took 559ms)
```

- You must print (and many other operations) inside a function (main here)
- Later, a few things allowed outside

Compiler **warning**: Where is return?

```cpp
1  #include<iostream>
2  using namespace std;
3
4  int main()
5  {
6      cout<<"I am Mostafa";
7  }
8
```

- Nothing stops the compiler to build the exe
- However, better to solve the warnings.
- Here we missed the return line. Which tells compiler we are done.
- But anyway. Once we reach line 7, program ends

Compiler **warning**: Maximum for int is 2147483647

```
 1  #include<iostream>
 2  using namespace std;
 3
 4  int main()
 5  {
 6      cout<<10*10*10*10*10*10*10*10<<"\n";
 7      cout<<10*10*10*10*10*10*10*10*10<<"\n";
 8
 9      cout<<2147483647+0<<"\n";
10      cout<<2147483647+1<<"\n";
11
12      return 0;
13  }
14
```

Problems Tasks **Console** ✕ Properties Call Graph Search

CDT Build Console [ztemp]
```
19:52:24 **** Auto Build of configuration Debug for project ztemp ****
make all
Building file: ../01_11_printing.cpp
Invoking: Cross G++ Compiler
g++ -O0 -g3 -Wall -c -fmessage-length=0 -std=c++11 -MMD -MP -MF"01_11_printing.d" -MT"
../01_11_printing.cpp: In function 'int main()':
../01_11_printing.cpp:7:34: warning: integer overflow in expression [-Woverflow]
  cout<<10*10*10*10*10*10*10*10*10<<"\n";
                                 ^
../01_11_printing.cpp:10:18: warning: integer overflow in expression [-Woverflow]
  cout<<2147483647+1<<"\n";
                  ^
Finished building: ../01_11_printing.cpp
```

- Overflow warning
- Maximum value for integer is 2147483647
- More ⇒ Fails

Run Time Error

```
 1  #include<iostream>
 2  using namespace std;
 3
 4  int main()
 5  {
 6      cout<<10<<"\n";
 7      cout<<11/0<<"\n";
 8      cout<<12<<"\n";
 9
10      return 0;
11  }
12
```

Problems | Tasks | Console ✕

\<terminated\> ztemp [C/C++ Application
10

- Compiler think it is ok
  - No errors
  - No warnings
- Let's run
  - Divide by zero!
  - Program crashes in the middle
- Reading

Your next tasks

- Create all the errors we did today.
  - Read the compiler error msg very well. Maybe keep it in some notes
- Create your errors!
  - Faced a new error?. Learn it
  - Don't understand it? Maybe google it

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."