

# Assignment 1

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## Hello world Program

```
#include<stdio.h>
int main()
{
    printf("Hello World!");
    return 0;
}
```

---

## 20 Bugs in the Program

### 1. Removed ';' from 'return 0'

hello\_world.c: In function 'main':

hello\_world.c:5:17: error: expected ';' before '}' token

```

5 |     return 0
  |           ^
  |           ;
6 | }
  | ~

```

## 2. Removed closing ‘”’ from ‘printf(“ “);’

hello\_world.c: In function ‘main’:

hello\_world.c:4:16: warning: missing terminating " character

```

4 |     printf("Hello World!);
  |           ^

```

hello\_world.c:4:16: error: missing terminating " character

```

4 |     printf("Hello World!);
  |           ^~~~~~

```

hello\_world.c:5:9: error: expected expression before ‘return’

```

5 |     return 0;
  |     ^~~~~~

```

hello\_world.c:5:18: error: expected ‘;’ before ‘}’ token

```

5 |     return 0;
  |           ^
  |           ;
6 | }
  | ~

```

## 3. used ‘print’ instead of ‘printf’

hello\_world.c: In function ‘main’:

hello\_world.c:4:9: warning: implicit declaration of function ‘print’; did you mean ‘printf’? [-Wimplicit-function-declaration]

```

4 |     print("Hello World!");
  |     ^~~~~
  |     printf

```

## 4. removed '}' from 'main' function

hello\_world.c: In function 'main':

hello\_world.c:5:9: error: expected declaration or statement at end of input

```
5 |     return 0;
  |     ^~~~~~
```

## 5. removed '{' from 'main' function

hello\_world.c: In function 'main':

hello\_world.c:4:9: error: expected declaration specifiers before 'printf'

```
4 |     printf("Hello World!");
  |     ^~~~~~
```

hello\_world.c:5:9: error: expected declaration specifiers before 'return'

```
5 |     return 0;
  |     ^~~~~~
```

hello\_world.c:6:1: error: expected declaration specifiers before '}' token

```
6 | }
  | ^
```

hello\_world.c:7: error: expected '{' at end of input

## 6. Removed opening "" from 'printf(" ");'

hello\_world.c: In function 'main':

hello\_world.c:4:16: error: 'Hello' undeclared (first use in this function); did you mean 'ftello'?

```
4 |     printf(Hello World!");
  |           ^~~~~~
  |           ftello
```

hello\_world.c:4:16: note: each undeclared identifier is reported only once for each function it appears in

hello\_world.c:4:21: error: expected ‘)’ before ‘World’

```
4 |     printf(Hello World!");  
  |           ~  ^~~~~~  
  |           )
```

hello\_world.c:4:28: warning: missing terminating " character

```
4 |     printf(Hello World!");  
  |               ^
```

hello\_world.c:4:28: error: missing terminating " character

```
4 |     printf(Hello World!");  
  |               ^~~
```

hello\_world.c:5:18: error: expected ‘;’ before ‘}’ token

```
5 |     return 0;  
  |           ^  
  |           ;  
6 | }  
  | ~
```

## 7. Removed opening ‘(’ from printf

hello\_world.c: In function ‘main’:

hello\_world.c:4:15: error: expected ‘;’ before string constant

```
4 |     printf"Hello World!";  
  |           ^~~~~~  
  |           ;
```

hello\_world.c:4:29: error: expected statement before ‘)’ token

```
4 |     printf"Hello World!";
```

## 8. Removed closing ‘)’ from printf

hello\_world.c: In function ‘main’:

hello\_world.c:4:30: error: expected ‘)’ before ‘;’ token

```

4 |     printf("Hello World!");
  |         ~         ^
  |
  |     )

```

hello\_world.c:5:18: error: expected ';' before '}' token

```

5 |     return 0;
  |         ^
  |         ;
6 | }
  | ~

```

## 9. removed '(' from 'main()'

hello\_world.c:2:9: error: expected '=', ',', ';', 'asm' or '\_\_attribute\_\_' before ')' token

```

2 | int main)
  |

```

## 10. removed ')' from 'main()'

hello\_world.c:3:1: error: expected declaration specifiers or '...' before '{' token

```

3 | {
  | ^

```

## 11. removed 'int' from 'int main()'

hello\_world.c:2:1: warning: return type defaults to 'int' [-Wimplicit-int]

```

2 | main()
  | ^~~~

```

## 12. removed '#' from '#include<>'

hello\_world.c:1:8: error: expected '=', ',', ';', 'asm' or '\_\_attribute\_\_' before '<' token

```

1 | include<stdio.h>

```

|     ^

### 13. removed '<' from '#include<>'

hello\_world.c:1:2: error: invalid preprocessing directive #includestdio

```
1 | #includestdio.h>
   | ^~~~~~
```

hello\_world.c: In function 'main':

hello\_world.c:4:9: warning: implicit declaration of function 'printf' [-Wimplicit-function-declaration]

```
4 |     printf("Hello World!");
   |     ^~~~~~
```

hello\_world.c:1:1: note: include '<stdio.h>' or provide a declaration of 'printf'

```
+++ |+#include <stdio.h>
1 | #includestdio.h>
```

hello\_world.c:4:9: warning: incompatible implicit declaration of built-in function 'printf' [-Wbuiltin-declaration-mismatch]

```
4 |     printf("Hello World!");
   |     ^~~~~~
```

hello\_world.c:4:9: note: include '<stdio.h>' or provide a declaration of 'printf'

### 14. Removed '>' from '#include<>'

hello\_world.c:1:17: error: missing terminating > character

```
1 | #include<stdio.h
   |             ^
```

### 15. removed space from 'return 0'

hello\_world.c: In function 'main':

hello\_world.c:5:9: error: 'return0' undeclared (first use in this function)

```
5 |     return0;
```

```
| ^~~~~~
```

hello\_world.c:5:9: note: each undeclared identifier is reported only once for each function it appears in

## 16. Removed space from 'int main()'

hello\_world.c:2:1: warning: return type defaults to 'int' [-Wimplicit-int]

```
2 | intmain()
```

```
| ^~~~~~
```

/usr/bin/ld: /usr/lib/gcc/x86\_64-redhat-linux/12/../../../../lib64/crt1.o: in function `\_start':

(.text+0x1b): undefined reference to `main'

collect2: error: ld returned 1 exit status

## 17. wrong spelling of 'include'

hello\_world.c:1:2: error: invalid preprocessing directive #include; did you mean #include?

```
1 | #include<stdio.h>
```

```
| ^~~~~~
```

```
| include
```

hello\_world.c: In function 'main':

hello\_world.c:4:9: warning: implicit declaration of function 'printf' [-Wimplicit-function-declaration]

```
4 |     printf("Hello World!");
```

```
|     ^~~~~~
```

hello\_world.c:1:1: note: include '<stdio.h>' or provide a declaration of 'printf'

```
+++ |+#include <stdio.h>
```

```
1 | #include<stdio.h>
```

hello\_world.c:4:9: warning: incompatible implicit declaration of built-in function 'printf' [-Wbuiltin-declaration-mismatch]

```
4 |     printf("Hello World!");
```

```
|     ^~~~~~
```

hello\_world.c:4:9: note: include '<stdio.h>' or provide a declaration of 'printf'

## 18. wrong spelling of header file

hello\_world.c:1:9: fatal error: stdo.h: No such file or directory

```
1 | #include<stdo.h>
```

```
|      ^~~~~~
```

compilation terminated.

## 19. Wrong spelling of 'main'

/usr/bin/ld: /usr/lib/gcc/x86\_64-redhat-linux/12/../../../../lib64/crt1.o: in function `\_start':

(.text+0x1b): undefined reference to `main'

collect2: error: ld returned 1 exit status

## 20. Wrong spelling of 'return'

hello\_world.c: In function 'main':

hello\_world.c:5:9: error: 'reurn' undeclared (first use in this function)

```
5 |     reurn 0;
```

```
|     ^~~~~
```

hello\_world.c:5:9: note: each undeclared identifier is reported only once for each function it appears in

hello\_world.c:5:14: error: expected ';' before numeric constant

```
5 |     reurn 0;
```

```
|           ^~
```

```
|           ;
```