Functions

(1) Given:

```
#include <iostream>
using std::cout;

void f(signed char c) { cout << “Signed char\n”; }
void f(unsigned char c) {cout << “Unsigned char\n”; }

int main() {
   char c1 = ‘a’;
   f(c1);
}
```

a) The output is: “Signed char\n”.

b) The output is: “Unsigned char\n”.

c) The output is implementation dependant.

d) There is a compilation error. Why?

e) There is a link error. Why?

(2) Given file A.cpp:

```
#include <iostream>
void f(int) { std::cout << “f(int)”; }
```

And file B.cpp:

```
#include <iostream>
void f(double) { std::cout << “f(double)”; }

int main() {
   f(3);
}
```

a) The output is “f(int)”.

b) The output is “f(double)”.

c) There is a compilation error. Why?

d) There is a link error. Why?

3) Given the file header.h:

```
#include <iostream>
void f(int d);
```

And the file A.cpp:

```
#include “header.h”
void f(int d = 10) {std::cout << d << “\t”; }
```

And the file B.cpp:

```
#include “header.h”
int main() {
   f();
   f(5);
}
```

a) The output is “10 5”.

b) The output is “??? 5”, where ??? is undefined.

c) There is a compilation error. Why?

d) There is a link error. Why?

4) Given:

```
#include <iostream>
using std::cout;

void f(float) { cout << “f(float)”; }
void f(long double) {cout << “f(long double)”; }
```

```
int main() {
    f(2.0);
}
```

a) The output is “f(float)”.

b) The output is “f(long double)”.

c) There is an ambiguity when calling f(2.0). Due to floating point promotions.

d) There is a link error.

5) Given:

```
#include <iostream>
using std::cout;
using std::endl;

void f(int&) { cout << “A”; }
void f(const int&) {cout << “B”; }

int main() {
    int i = 10;
    const int ci = 11;
```

```
    f(i);
    f(ci);
}
```

a) The output is “AA”.
b) The output is “AB”.
c) The output is “BA”.
d) The output is “BB”.
e) There is a compilation error. Why?
f) There is a link error. Why?

6) Given:

```
int f() { return 1; }
double f() { return 2.5; }

int main() {
    int ret = f();
    return ret ;
}
```

a) The returned value is 1.

b) The returned value is 2.

c) The returned value is 3.

d) There is a compilation error. Why?

e) There is a link error. Why?

7) Given:

```
#include <iostream>

void f(int) { std::cout << "int"; }
void f(double) { std::cout << "double"; }

int main() {
    char a = 'a';
    f(a);
}
```

a) The output is "int".

b) The output is "double".

c) There is a compilation error. Why?

d) There is a link error. Why?

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(8) Write a sort() function that takes a pointer of ints and its size, and sort them incrementally

(9) Create a function that takes an argument by value as a **const**; then try to change that argument in the function body.

(10) Define a function that takes a **double** argument and returns an **int**. Create and initialize a pointer to this function, and call the function through your pointer.

(11) Declare a pointer to a function taking an **int** argument and returning a pointer to a function that takes a **char** argument and returns a **float**.