

# Exam 2 Questions

## CSE 232 (Introduction to Programming II)

1. If a string variable named `str` is declared, what is the type of the expression `&str`?

(a) `string`  
(b) `string *`  
(c) `string &`  
(d) `& string`  
(e) None of the choices

2. You are given the following function:

```
void SomFunc(int a, int b){  
    cout << a << " and " << b;  
}
```

What is the output of the following?

```
int a = 5;  
int b = 3;  
SomFunc(a++, --b);
```

(a) 5 and 3  
(b) `5 and 2`  
(c) 6 and 3  
(d) 6 and 2  
(e) Undefined behavior

3. Given the following function declarations, which of the following overloaded functions are valid?

```
void Green();  
int Green();
```

```
int White(string);  
int White(int);
```

```
string Sparty(string s);  
string Sparty();
```

(a) `Green` is overloaded  
(b) `White` is overloaded  
(c) `Sparty` is overloaded  
(d) (a) and (c)  
(e) `(b) and (c)`

4. What is the difference between the following two loops?

```
for (int i = 11; i > 0; --i){  
    ...  
}
```

And

```
int i = 11;  
while (i > 0){  
    ...  
    i--;  
}
```

(a) The two loops are identical  
(b) The values of the two `i`'s are different at the end of each loop iteration  
(c) `The scope of i is different.`  
(d) (b) and (c)

5. What is the correct way to declare a pointer to a char `c`?

(a) `char *ptr = &c;`  
(b) `char &ptr = c;`  
(c) `char *ptr = c;`  
(d) `char ptr = *c;`  
(e) (a) and (b)  
(f) (b) and (c)

6. Which of the following correctly declares a vector of doubles?

(a) `vector<double> v;`  
(b) `double vector v;`  
(c) `vector v<double>;`  
(d) `double v<vector>;`  
(e) `vector double v;`

7. What is the output of the following?

```
vector<char> v = {'H', 'O', 'W',  
'D', 'Y'};  
for (int i = v.size() - 1; i > 0 ;  
i--) {  
    cout << v.at(i) << " ";  
}
```

- (a) H O W D Y
- (b) Y D W O H
- (c) **Y D W O**
- (d) D W O H
- (e) D W O

8. What is the missing line in the code below, so that it outputs 7?

```
class MyClass {  
public:  
    int x;  
    MyClass(int val) : x(val) {}  
};  
  
int main() {  
    MyClass obj1(7);  
    // Missing code  
    cout << obj2.x;  
    return 0;  
}
```

- (a) MyClass obj2 = obj1;
- (b) MyClass &obj2 = obj1;
- (c) MyClass \*obj2 = &obj1;
- (d) **(a) and (b)**
- (e) (b) and (c)
- (f) (a) and (c)

9. You are given the following function:

```
void swap(int *a, int b) {  
    int temp = *a;  
    *a = b;  
    b = temp;  
}
```

What is the output of the following?

```
int x = 13, y = 11;  
swap(&x, y);  
cout << x << " " << y;
```

- (a) **11 11**
- (b) 11 13
- (c) 13 11
- (d) 13 13
- (e) Compile error

10. Which of the following is equivalent to (\*ptr).func();?

- (a) ptr.func();
- (b) \*ptr.func();
- (c) \*(ptr).func();
- (d) **ptr->func();**
- (e) \*ptr->func();

11. Your program consists of the following files:

```
main.cpp  
foo.cpp  
foo.h  
bar.cpp  
bar.h
```

How would you complete the command `g++ -Wall -std=c++20` to compile your program?

- (a) main.cpp foo.cpp foo.h bar.cpp bar.h
- (b) **main.cpp foo.cpp bar.cpp**
- (c) main.cpp foo.h bar.h
- (d) main.cpp
- (e) Depends on the files

12. What of the following is the correct way of including a user-defined header file `commands.h`?
- (a) `#include <commands.h>`
  - (b) `#include "commands.h"`
  - (c) `#include commands.h`
  - (d) (a) and (b)
  - (e) (b) and (c)
13. Which of the following commands should be executed from the command line to redirect the contents of `a.txt` to be the input for `a.out`, and redirect the output from `a.out` into `b.txt`?
- (a) `./a.out < a.txt > b.txt`
  - (b) `./a.out < b.txt > a.txt`
  - (c) `a.txt > ./a.out > b.txt`
  - (d) `b.txt < ./a.out < a.txt`
  - (e) `a.txt < b.txt < ./a.out`
  - (f) `b.txt > a.txt > ./a.out`
14. Which of the following is true about `const` functions?
- (a) A `const` function does not change the object the function belongs to
  - (b) A `const` function can be called on a `const` object
  - (c) A `const` function cannot be called on a non-`const` object
  - (d) (a) and (b)
  - (e) (b) and (c)
  - (f) All of the choices
15. Which of the following is true about a member function that simply prints `GREETINGS!` to the command line?
- (a) It should have a return type
  - (b) It should be a void function
  - (c) It should be a `const` function
  - (d) (a) and (c)
  - (e) (b) and (c)
16. If a class requires a user-defined copy constructor, what else is almost always required to be user-defined?
- (a) A copy assignment operator
  - (b) A move assignment operator
  - (c) A move constructor
  - (d) A destructor
  - (e) (b) and (c)
  - (f) (a) and (d)
  - (g) All of the choices
17. Which of the following is not true?
- (a) `operator<<` works with `istream`
  - (b) `operator>>` works with `ostream`
  - (c) `operator<<` works with `ostream`
  - (d) `operator>>` works with `istream`
  - (e) (a) and (b)
  - (f) (c) and (d)
18. When should `fstream` be used?
- (a) Reading from and writing to the terminal
  - (b) Reading from and writing to files
  - (c) IO redirection
  - (d) All of the choices
19. What does the command `git init` do when executed from the command line?
- (a) Initializes a new branch in the current git repository
  - (b) Initializes a new commit to the current git repository
  - (c) Initializes the current working directory a git repository
  - (d) Initializes a new pull request in the current git repository
20. Which of the following git commands is used to download commits from a remote repository into an existing local repository?
- (a) `git clone`
  - (b) `git pull`
  - (c) `git innit`
  - (d) (a) and (b)
  - (e) All of the choices

21. Which of the following statements is true?

- (a) A local repository can exist without a remote repository
- (b) A remote repository can exist without a local repository
- (c) Changes made to remote repository are automatically synced with local repository
- (d) (a) and (b)
- (e) (b) and (c)
- (f) All statements are true

22. Which of the following is an example of a valid HTTPS URL of a repository?

- (a) `https://github.com/user/project.git`
- (b) `git@github.com:user/project.git`
- (c) `https://github.com/user/project`
- (d) (a) and (b)
- (e) (b) and (c)
- (f) All of the choices

23. What is type of `x` in the following code?

```
const char* c = "MSU";  
auto x = c[1];
```

- (a) `char`
- (b) `const char`
- (c) `string`
- (d) `const string`
- (e) "MSU" cannot be stored this way

24. Which of the following is an example of a multi-line comment in C++?

- (a) `\\Commented text`
- (b) `// Commented text`
- (c) `# Commented text`
- (d) `<!-- Commented text -->`
- (e) `\* Commented text *\`
- (f) `/* Commented text */`

25. If `x` is a reference, how do you access its value?

- (a) `x`
- (b) `&x`
- (c) `*x`
- (d) None of the choices

26. How many arguments does a default constructor take in?

- (a) No argument
- (b) One argument
- (c) At least one argument
- (d) Depends on the class

27. How many constructors can a class have?

- (a) None
- (b) Exactly one
- (c) One or more
- (d) At most one

28. You have a function that takes a vector of integers `v` and an index `i` as function parameters, and returns the value stored in `v` at the index `i`. Which of the following exceptions should you check for (and throw) in this function?

- (a) `logic_error`
- (b) `invalid_argument`
- (c) `domain_error`
- (d) `length_error`
- (e) `out_of_range`

29. Which of the following is an advantage of using assertions over exceptions?

- (a) Assertions can be easily turned off
- (b) Assertions can be used in compile-time, unlike exceptions
- (c) Assertions are more optimized than exceptions
- (d) All of the choices
- (e) None of the choices

30. Which of the following commented lines can var not be accessed from?

```
for (;;) {  
    string var;  
    // Label A  
    while (x.length() < 3) {  
        // Label B  
    }  
    // Label C  
}  
// Label D
```

- (a) Label A
- (b) Label B
- (c) Label C
- (d) **Label D**
- (e) It can be accessed from everywhere

31. If the following line of code does not cause a compiler error, which of the following is a valid type for x?

```
const int y = x[0];
```

- (a) `const vector<int>`
- (b) `vector <const int>`
- (c) `vector <double>`
- (d) **All of the choices**

32. Consider the following code:

```
const MyClass someObj;
```

Which of the following member functions cannot be called on `someObj`, assuming the functions do exactly as their names imply, and nothing else?

- (a) `getValue`
- (b) **`setValue`**
- (c) `printValue`
- (d) (a) and (b)
- (e) All of the choices

33. What makes a `const MyClass *` different from a `MyClass *`?

- (a) **A `const MyClass *` cannot change the object it points to**
- (b) A `const MyClass *` cannot change to point at a different object
- (c) They are identical
- (d) A `const MyClass *` must be initialized, not just declared

34. Which of the following is true about assertions?

- (a) **They can generate run-time errors**
- (b) They can generate compile-time errors
- (c) They are part of the `<assert>` library
- (d) None of the choices

35. Which git command is used to send a local repository's commits to a remote repository?

- (a) `git add`
- (b) `git commit`
- (c) `git fetch`
- (d) `git pull`
- (e) **`git push`**

36. A const member function has what property that distinguishes it from a non-const member function?

- (a) **It can be called on const objects**
- (b) It has only const parameters
- (c) It returns a const object
- (d) It returns a reference to a const object
- (e) All of the choices

37. What is the purpose of header guards?

- (a) To allow for faster compilation
- (b) To allow templates to be instantiated
- (c) **To avoid redeclaration/redefinition errors**
- (d) To ensure that a class's privacy is maintained
- (e) All of the choices

38. You have a class `MyClass` with a member function `run` that does not take any function parameters. Now, what is the missing line in the code below that calls the function `run`?

```
MyClass o;  
//missing code
```

- (a) `run;`
- (b) `run();`
- (c) `MyClass.run;`
- (d) `MyClass.run();`
- (e) `o.run;`
- (f) `o.run();`

39. In the code below, what is the initial value of `i` in debugging mode if the breakpoint is set at the line of the comment?

```
for(int i = 10; i >= 5; i--){  
    cout << i; //Breakpoint here  
}
```

- (a) 0
- (b) 5
- (c) 9
- (d) 10
- (e) Undefined/Garbage

40. What is the missing line in the code below, so that the output is `HELLO`?

```
const char* c = "HELLO";  
int i = 0;  
//Missing code  
{  
    cout << c[i];  
    i++;  
}
```

- (a) `while(i < c.size())`
- (b) `while(i < size(c))`
- (c) `while(c[i] != '\0')`
- (d) `while(c[i] != '/0')`

string