CSC3002 Final Review

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A few tips

1. Finish Review Questions selectively
2. Two hours is generally enough
3. Be careful
4. No care on memory things (grammar / methods / functions)
5. Don’t‘ worry!

- This examination has the following types of questions:
  - True or False
  - Single-Choice
  - Multi-Choice (1~4 correct options, with partial scores)
  - Fill-in-the-Blanks

True or False

01

True or False

1. C++, C, Java, Python are all Object-Oriented Programming language
2. Abstraction in C++ means displaying only essential information and hiding the details.
3. The main function can be declared as void main(){ … };
4. *&x and &*x will generate the same results if x is a pointer;
5. Global variables are stored in the static area in memory in C++

6. The default copy style for C++ is deep copy

7. In C++, user can overload the copy constructo

and assignment operator (=) for a stream

8. In the ring-buffer implementation of a queue, th

if and only if head == tail. When the queue is full, head > tail.

9. To declare a variable fn as a pointer to a function taking two integers and returning a Double value, we use:

```
double* (*fn) (int, int);
```

10. Multiple inheritance and garbage collection are both useful features in C++

Single Choice

02

What is the result of the following expression:

6 + 5.0 / 4 - 3 / 2 + (1 - 2) * (5 * 6 % 9 * 2)

A. 0.25

B. 0

C. -5.75

D. -0.25

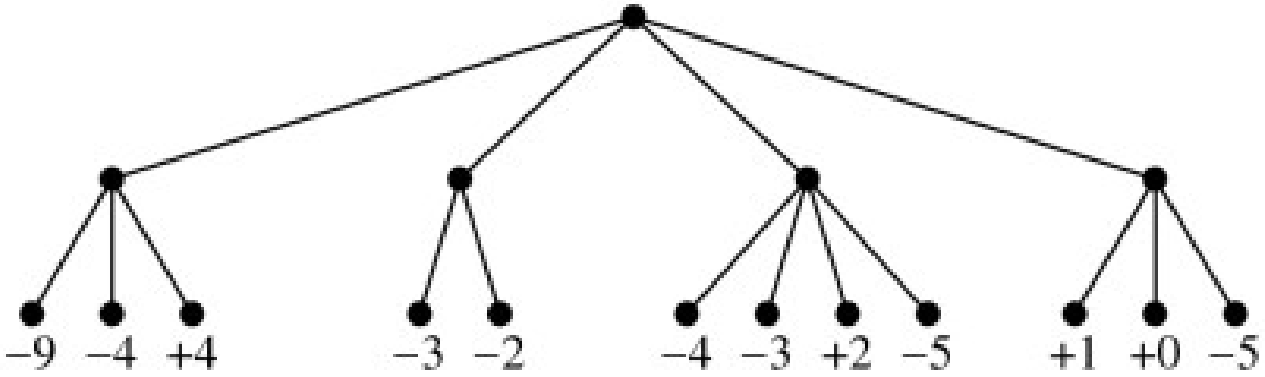
Suppose you are in a position in which the analysis for the next two moves shows the following rated outcomes from your original player's point-of-view: If you adopt the minimax strategy, what is the best move to make in this position? What is the rating of that move from your perspective?

A. First cross, +4

B. Second cross, -3

C. Second cross, -2

D. Third cross, +2



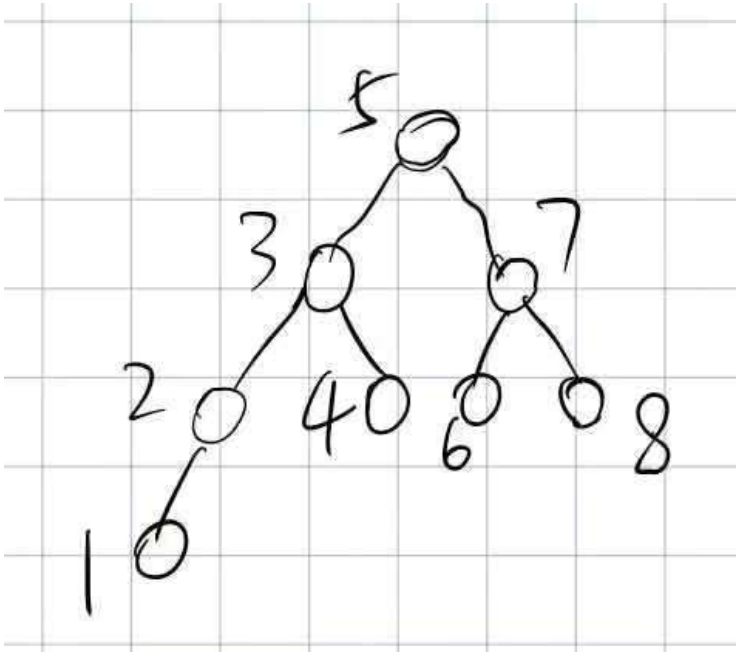
What is the preorder, inorder, and postorder traversal results for the following trees?

A. 53214768, 12345678, 12436875

B. 53214768, 53724681, 86754321

C. 12345678, 53724681, 12436875

D. 12345678, 12345678. 86754321



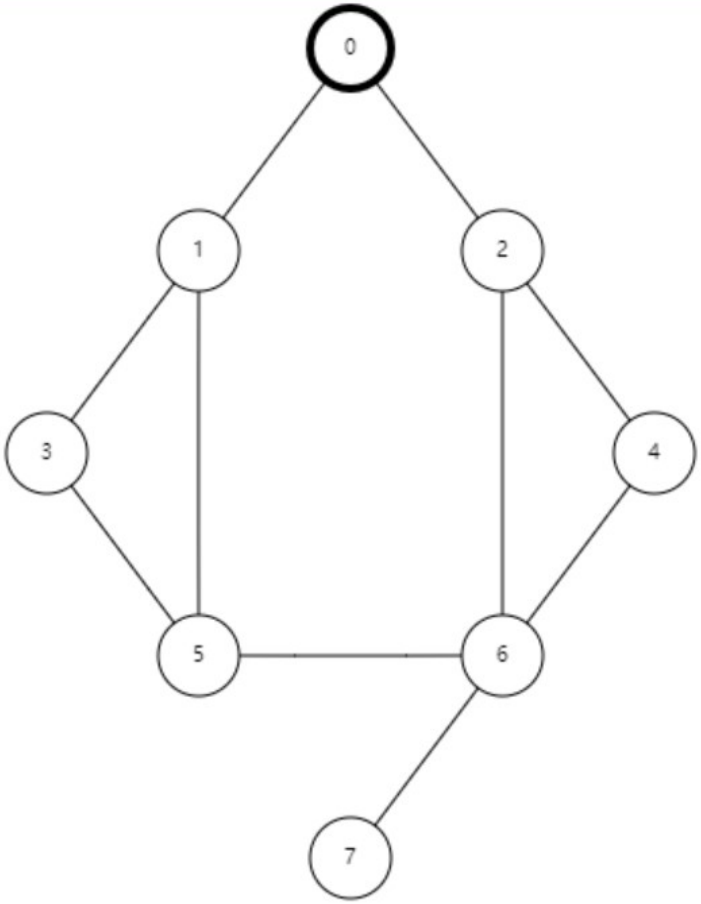
What is the DFS & BFS traversal order for the following graph? Assume the smaller number is prior at the same level. Start from 0

A. 01356247, 01234567

B. 01356247, 01235467

C. 01356724, 01234567

D. 02465137, 01235467



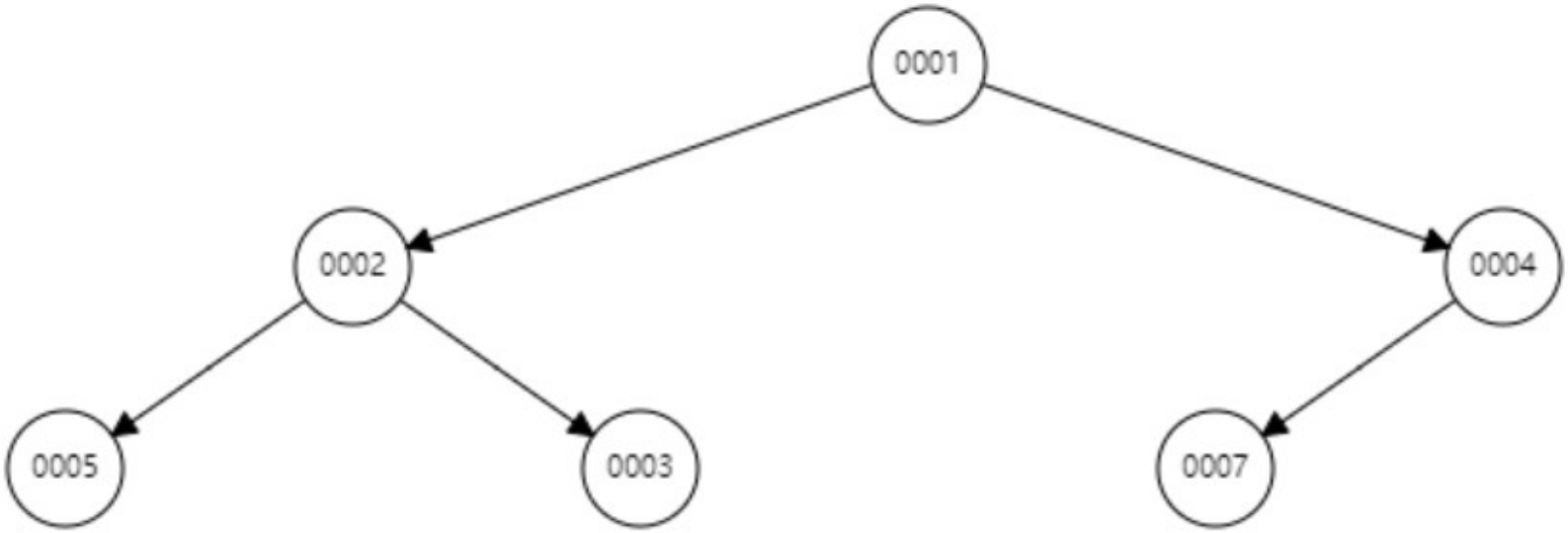
What is the resulting heap after performing the following operations: Dequeue, Enqueue(1)

A. 124537

B. 134537

C. 132574

D. 134572



Multiple Choice

03

Which of the following collection classes support the use of the range-based for loop?

A. Vector
B. Map
C. Stack
D. Priority Queue

Suppose that you are using a sorting algorithm to sort a vector of 250 values and find that it takes 100 milliseconds to complete the operation. What would you expect the sorting algorithm and running time to be to sort a vector of 2000 values on the same machine?

A. Selection Sort, 8000ms
B. Insertion Sort, 6400ms
C. Quick Sort, 2400ms
D. Merge Sort, 800ms

Which of the following expressions can compile successfully? (Under the following initialization)

```
double a[3] = {1.0, 2.0, 3.0};
double* b = &a[0];
```

A. cout << b[0] << endl;

B. cout << *b++ << endl;

C. cout << *++b << endl;

D. cout << *a++ << endl;

Which integers will be outputted in the following code?

```
class A {
public:
    int a = 1;
    void display() { cout << a << endl; }
};

class B: public A {
public:
    int b = 2;
    void display() {
        cout << a << b << endl;
    }
};
class C: public B {
public:
    int c = 3;
    virtual void display() {
        cout << a << b << c << endl;
    }
};
class D: public C {
public:
    int d = 4;
    void display() {
        cout << a << b << c << d << endl;
    }
};
```

```
C* pC = &oD;
pC->display();
```

A. 1

B. 2

C. 3

D. 4

Assume A is a super class of B. Which one(s) of the following is visible to A?

A. Public field of B
B. Private field of B
C. Protected field of B
D. Protected field of A

Space Filling

04

Write down the **formatted output** of the following code:

```
string str = string("CSC") + " " + "3002";
cout << str1;
```

```
string str2 = "CSC" + " " + "3002";
cout << str2;
```

```
vector<int> vec = {1, 2, 3, 4, 5};
cout << *vec.begin() << endl;
cout << *vec.begin() + 3 << endl;
cout << *(vec.end() - 1) << endl;
cout << *vec.end() - 1 << endl;
```

Write down the **formatted output** of the following code:
Assume the address of the array is **0x61fe0c**

```
int a[3] = {1, 2, 3};
int* b = a;
```

```
cout << *b << endl;
cout << a[2] << endl;

cout << &a[0] << endl;
cout << &a << endl;
cout << *(a + 1) << endl;
cout << a + 1 << endl;
cout << &a + 1 << endl;
cout << b + 1 << endl;

cout << *(b + 1) << endl;
cout << *b + 1 << endl;
cout << *b++ << endl;
cout << *++b << endl;
cout << *(--b) << endl;
cout << (*b)++ << endl;
cout << a[1] << endl;
```

Answer

05

True or False: FTFTT FFFFF

Single Choice: ABABC

Multiple Choice: AB BC ABC ABCD AD

Space Filling

```
CSC 3002
```

```
,,find.cpp: In function 'int main()':
find.cpp:14:27: error: invalid operands of types 'const char [6]' and 'const char [2]' to binary 'operator+'
     string str2 = "hello" + "," + string("world");
                   ~~~~~~~~^~~~~
```

```
1
4
5
-1
```

Space Filling

```
C:\Users\ASUS\Desktop\CSC3002\code>.\"memory.exe"
1
3
0x61fe0c
0x61fe0c
2
0x61fe10
0x61fe18
0x61fe10
2
2
1
3
2
2
3
```

Thanks &
Wish You Good Luck!