CSCE4133/5133 – Algorithms

Quiz 1

Fall 2024

Time: 20 minutes

Instructions:

· Write your full name, email address and student ID in the report.

· Submission via paper

Question 1: What is the output of the following program?

```
#include <iostream>
using namespace std;
int main()
{
        int a=2, b = 4;
        int c = ++a * b--;
        cout<< "c = " << c;
        return 0;
}
```

(A) c = 6
(B) c = 8
(C) c = 9
(D) c = 12

Question 2: What is the output of the following program?

```
#include <iostream>
using namespace std;
int main()
{
        int *a = new int();
        *a = 50;
        int b = 200/(*a);
        cout << "b = " << b++;
}
```

(A) b = 4
(B) b = 5
(C) Compilation Error
(D) None of them

Question 3: What is the output of the following code?
```
#include <iostream>
using namespace std;
int main()
{
        int i;
        for (i=2; i > 0; i--)
                cout << "i = " << i << ", ";
        return 0;
}
```

(A) i = 2, i = 1,
(B) i = 1, i = 0,
(C) i = 1,
(D) i = 0,

Question 4: What is the output of the following program?

```
#include <iostream>
using namespace std;
int main()
{
        int a = 1, b = 1;
        cout << "a = " << (a = 2) << ", b = " << (b == 1);
        int c = a + b;
        cout << ", c = " << c;
        return 0;
}
```

(A) a = 1, b = 1, c = 2
(B) a = 1, b = 1, c = 3
(C) a = 2, b = 1, c = 3
(D) Compilation Error

Question 5: What is the output of the following program?

```
#include<iostream>
using namespace std;
int main()
{
        char a = -1;
        cout << "a = " << (int)(unsigned char)a;
        char b = a + 256;
        cout << ", b = " << (int)b;
        return 0;
}
```

(A) a = -1, b = -1
(B) a = -1, b = 255
(C) a = 255, b = -1
(D) a = 255, b = 255

3

Question 6: What is the output of the following program?
```cpp
#include <iostream>

using namespace std;

int main()  {
    int value = 2048;
    cout << "value = " << (value >> 10);
}
```

(A) value = 2038
(B) value = 2
(C) value = 10
(D) value = 1

Question 7: What is the output of the following program?

```cpp
#include <iostream>

using namespace std;

int main()  {
    int *a = new int[2];
    a[0] = 1; a[1] = 2;
    int **b;
    b = &a;
    **b = 2;
    *(*b + 1) = a[0]*3;
    cout << "a[0] = " << a[0] << ", a[1] = " << a[1];
    delete []a;
}
```

(A) a[0] = 1, a[1] = 2
(B) a[0] = 2, a[1] = 6
(C) a[0] = 1, a[1] = 3
(D) None of them

Question 8: What is the output of the following program?

```cpp
#include <iostream>
using namespace std;
class Int {
        static int count;
        int value;
        public:
                Int() { count++; }
                ~Int() { count--; }
                Int(const Int &rhs): Int() { this->value = rhs.value; }
                void set(int value) { this->value = value; }
                static int getCount() { return count; }
                bool less(Int x) { return this->value < x.value; }
};

int Int::count = 0;

int main() {
        Int a[5];
        for (int i = 0; i < 5; ++i)
                a[i].set(i);
        for (int i = 0; i < 4; ++i)
                for (int j = i + 1; j < 5; ++j) {
                    Int tmp = a[i];
                        if (a[i].less(a[j])) {
                                a[i] = a[j];
                                a[j] = tmp;
                        }
                }
        cout << "count = "<< Int::getCount();
}
```

(A) count = 5
(B) count = 10
(C) count = 15
(D) count = 20

Question 9: What is the output of the following program?

```cpp
#include<iostream>
using namespace std;

int func(int y) {
        if (y == 0)
            return 1;
        int tmp = func(y / 2);
        if (y % 2 == 0)
            return tmp * tmp;
        else
            return tmp * tmp * 2;
}

int main()
{
        cout << "func(10) = " << func(10);
}
```

(A) func(10) = 10
(B) func(10) = 20
(C) func(10) = 1024
(D) func(10) = 512

Question 10: What is the output of the following program?

```cpp
#include<iostream>
using namespace std;
int &func()
{
        static int x = 20;
        x = x + 20;
        return x;
}

int main()
{
        func() = func() + 20;
        cout << "x = " << func();
        return 0;
}
```

(A) x = 40   (B) x = 60   (C) x = 80   (D) None of them