COS1512 OCT 2017 EXAM ATTEMPT

Question 1

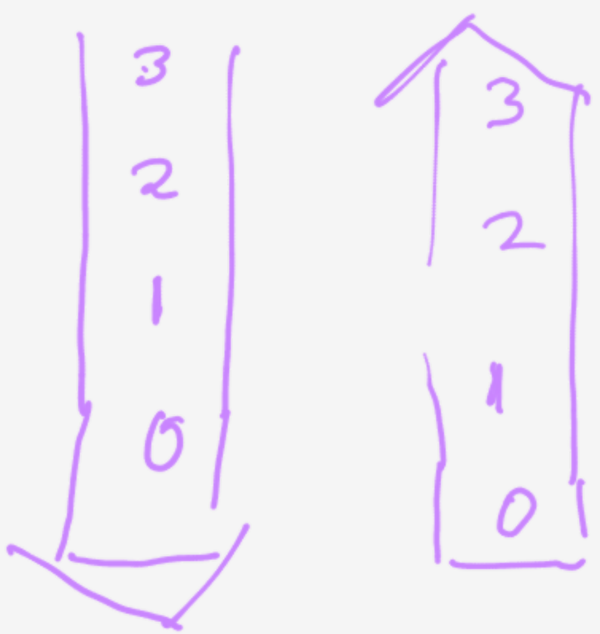
1.1 line 2 is invalid because is changing a fixed array of char.

1.2 strcpy(name, "James Khumalo");

1.3 A C-string ends with '\0'

Question 2

2.1 Rough work



solution

2.1 output :-

0

1

2

3

2.2 Display the count from 0 up to the given number

2.3 The function will call itself to infinity and nothing will be displayed.

Question 3

3.1 line 4 and line 5 and line 6

because p2 and p1 points to the same address

and delete p2 makes p1 to be a dangling

pointer

then line 6 is a problem also because

p1 memory is deallocated in line 5

3.2.1 a is declared in a blocks of stack memory

3.2.2 q is declared in a blocks of heap memory

Question 4

See the program below: (attachment)

Question 5

5.1 Yes, because the sphere class has common characteristics and plus additional characteristics.
e.g area() of sphere can override area from Circle

5.2

```
const double PI = 3.14159265;

class Circle
{
    public:
        Circle(string name, double rad);
        ~Circle()
        double area() const;
        string getShapeName() const;

    protected:
        double radius;
        string shapeName;

};
```

```
class Sphere : public Circle
{
    public:
        Sphere(string name, double rad);
        ~Sphere();
        double area() const;
        double volume() const;
};
```

5.3

```
Sphere::Sphere(string name, double rad)
    : Circle(name, rad)
{

}
```

Question 6

6.1

```
template < class T >
class Set
{
public:
    Set ();
    void add ( const T &1 );
    void remove (const T &1);
    void display (ostream & out = cout) const;
    Set intersection (const Set &s) const;
    Set union (const Set &s) const; //changed bcs union :: a keyword in c++
    Set difference (const Set &s);
private:
    vector < T > V;
};
```

6.2

```
template<class T>
void Set<T>::add(const T &l)
{
    bool isIn(false);
    for(int i=0; i<v.size(); i++)
    {
        if(v[i]==l)
        {
            isIn = true;
            break;
        }
    }
    if(!isIn)
        v.push_back(l);
}
```

f. 3

```
Set<char>  myChars;
```