SE 201 Object Oriented Programming

LAB # 9

Name : Musadique Hussain

Roll No. : 31

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Group : Software Engineering
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Remarks : _____

Signature : _____

Lab #9

Inheritance

Exercise

Q1: Consider using the following Student class as a base class and Ug & Pg as derived classes to implement all missing codes:

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

class Student
{
protected:
    int usn, age;
    char name[20];
};
class Ug : public Student
{
private:
    int sem, fee, sti;
public:
    void getdata()
    {
        cin >> name >> age >> sti;
    }
    void display()
    {
        cout << name << "\t" << age << "\t" << sem << endl;
    }
    int getsem()
    {
        return(sem);
    }
    int getage()
    {
        return(age);
    }
};
class Pg : public Student
{
private:
    int sem, fee, sti;
public:
    void getdata()
    {
        cin >> name >> age >> sti;
    }
    void display()
    {
        cout << name << "\t" << age << "\t" << sem << endl;
    }
    int getsem()
    {
```

```
        return(sem);
    }
    int getage()
    {
        return(age);
    }
};
int main()
{
    Ug p;
    p.getdata();
    p.display();
    Pg g;
    g.getdata();
    g.display();
    system(_Command:"pause>0");
    return 0;
}
```

Q2: Define a base class rectangle and derive class box type from it. Show single inheritance of some functions as discussed in class lectures.

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

class rectangle {
public:
    void setWidth(int w)
    {
        width = w;
    }
    void setLength(int l)
    {
        length = l;
    }
protected:
    int width;
    int length;
};
class boxType : public rectangle
{
public:
    int getArea()
    {
        return (width * length);
    }
};
int main(void) {
    boxType box1;
    box1.setWidth(w:5);
    box1.setLength(l:7);
    cout << "The value of area is " << box1.getArea() << endl;
    system(_Command:"pause>0");
    return 0;

}
```

```
E:\Study Materials\C++\Ben\x64\Debug\Ben.exe
The value of area is 35
```

Q3: Write the output of the following code:

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

class B
{
public:
    B();
    B(int n);
    int getp() const;
    int getq() const;
protected:
    int p;
private:
    int q;
};
B::B()
{
    p = 0;
    q = 0;
}
B::B(int n)
{
    p = n;
    q = n;
}
int B::getp() const
{
    return p;
}
int B::getq() const
{
    return q;
}
class D : public B
{
public:
    D();
    D(int n);
    int getr() const;
private:
    int r;
};
D::D()
{
    r = 0;
}
D::D(int n): B(n)
{
    r = n;
}
int D::getr() const
{
    return r;
}
int main() {
    D d(3);
    cout << d.getp() << " " << d.getq() << " " << d.getr() << endl;
    system(_Command:"pause>0");
    return 0;
}
```