

# SE 201 Object Oriented Programming

## LAB # 9

Name : Musadique Hussain

Roll No. : 31

Semester : Spring\_\_\_\_\_ Section: A\_\_\_\_\_

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:

```
1  #include <iostream>
2  using namespace std;
3
4  class Student
5  {
6  protected:
7      int usn, age;
8      char name[20];
9  };
10 class Ug : public Student
11 {
12 private:
13     int sem, fee, sti;
14 public:
15     void getdata()
16     {
17         cin >> name >> age >> sti;
18     }
19     void display()
20     {
21         cout << name << "\t" << age << "\t" << sem << endl;
22     }
23     int getsem()
24     {
25         return(sem);
26     }
27     int getage()
28     {
29         return(age);
30     }
31 };
32 class Pg : public Student
33 {
34 private:
35     int sem, fee, sti;
36 public:
37     void getdata()
38     {
39         cin >> name >> age >> sti;
40     }
41     void display()
42     {
43         cout << name << "\t" << age << "\t" << sem << endl;
44     }
45     int getsem()
46     {
```

```

47         return(sem);
48     }
49     int getage()
50     {
51         return(age);
52     }
53 };
54 int main()
55 {
56     Ug p;
57     p.getdata();
58     p.display();
59     Pg g;
60     g.getdata();
61     g.display();
62     system(_Command_ "pause>0");
63     return 0;
64 }

```

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

```

1  #include <iostream>
2  using namespace std;
3
4  class rectangle {
5  public:
6      void setWidth(int w)
7      {
8          width = w;
9      }
10     void setLength(int l)
11     {
12         length = l;
13     }
14 protected:
15     int width;
16     int length;
17 };
18 class boxType : public rectangle
19 {
20 public:
21     int getArea()
22     {
23         return (width * length);
24     }
25 };
26 int main(void) {
27     boxType box1;
28     box1.setWidth(5);
29     box1.setLength(7);
30     cout << "The value of area is " << box1.getArea() << endl;
31     system(_Command_ "pause>0");
32     return 0;
33 }
34 }

```

E:\Study Materials\C++\Ben\x64\Debug\Ben.exe

The value of area is 35

Q3: Write the output of the following code:

```

1  #include <iostream>
2  using namespace std;
3
4  class B
5  {
6  public:
7      B();
8      B(int n);
9      int getp() const;
10     int getq() const;
11 protected:
12     int p;
13 private:
14     int q;
15 };
16 B::B()
17 {
18     p = 0;
19     q = 0;
20 }
21 B::B(int n)
22 {
23     p = n;
24     q = n;
25 }
26 int B::getp() const
27 {
28     return p;
29 }
30 int B::getq() const
31 {
32     return q;
33 }
34 class D : public B
35 {
36 public:
37     D();
38     D(int n);
39     int getr() const;
40 private:
41     int r;
42 };
43 D::D()
44 {
45     r = 0;
46 }
47 D::D(int n): B(n)
48 {
49     r = n;
50 }
51 int D::getr() const
52 {
53     return r;
54 }
55 int main() {
56     D d(3);
57     cout << d.getp() << " " << d.getq() << " " << d.getr() << endl;
58     system("Command:pause>0");
59     return 0;
60 }

```

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