Assignment 6

The due date for submitting this assignment has passed. Due on 2020-03-11, 23:59 IST. As per our records you have not submitted this assignment.

1) Consider the following program.  

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

class A {
    int a;
    public:
        A(int x) : a(x) {} 
        void print() { cout << a << endl; }
    }

int main() {
    A *a1 = new A(5);

    void *x;
    x = new int(10);
    x = a1;
    x->print();
    return 0;
}
```

What will be the output/error of the above code?

- a) 5
Module 28: Dynamic Binding (Polymorphism): Part III (Lecture 43)

Module 29: Dynamic Binding (Polymorphism) Part IV (Lecture 44)

Module 30: Dynamic Binding (Polymorphism): Part V (Lecture 45)

Lecture Materials

Quiz: Assignment 6 (assessment?name=134)

W6_ProgrammingQs-1 (/noc20_cs07/progassignment?name=136)

W6_ProgrammingQs-2 (/noc20_cs07/progassignment?name=137)

W6_ProgrammingQs-3 (/noc20_cs07/progassignment?name=138)

W6_ProgrammingQs-4 (/noc20_cs07/progassignment?name=139)

Feedback For Week 6 (unit?unit=8&lesson=146)

Week 7

Week 8

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2) Consider the following program.

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

class A {
public:
    void f() { }
};

class B : public A {
public:
    ___________ // LINE-1
    void f(int a) {} 
};

int main() {
    B b;
    b.f(); // LINE-2
    return 0;
}
```

Fill in the blanks in LINE-1 so that the function call at LINE-2 will not give any error.

b) 10
c) Error: Request for member 'print' in 'x', which is of non-class type 'void''
d) Error: Cannot convert 'A' to 'void'' in assignment

No, the answer is incorrect.
Score: 0

Accepted Answers:
c) Error: Request for member 'print' in 'x', which is of non-class type 'void''

2) Consider the following program.

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

class A {
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};

class B : public A {
public:
    ___________ // LINE-1
    void f(int a) {} 
};

int main() {
    B b;
    b.f(); // LINE-2
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}
```

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b) 10
c) Error: Request for member 'print' in 'x', which is of non-class type 'void''
d) Error: Cannot convert 'A' to 'void'' in assignment

No, the answer is incorrect.
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c) Error: Request for member 'print' in 'x', which is of non-class type 'void''

2) Consider the following program.

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#include <iostream>
using namespace std;

class A {
public:
    void f() { }
};

class B : public A {
public:
    ___________ // LINE-1
    void f(int a) {} 
};

int main() {
    B b;
    b.f(); // LINE-2
    return 0;
}
```

Fill in the blanks in LINE-1 so that the function call at LINE-2 will not give any error.

b) 10
c) Error: Request for member 'print' in 'x', which is of non-class type 'void''
d) Error: Cannot convert 'A' to 'void'' in assignment

No, the answer is incorrect.
Score: 0

Accepted Answers:
c) Error: Request for member 'print' in 'x', which is of non-class type 'void''
3) Consider the following program.

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

class A { public:
    A() { cout << "A()" << endl; }
    virtual ~A() { cout << "~A()" << endl; }
};

class B : public A { public:
    B() { cout << "B()" << endl; }
    ~B() { cout << "~B()" << endl; }
};

int main() {
    A *a = new A();
    A *b = new B();
    delete a;
    delete b;
    return 0;
}
```

What will be the output of the following code?

- a) A()
- A()
- B()
- ~A()
- ~B()
- ~A()
- ~B()
- b) A()
- A()
- B()
- ~A()
- ~A()
- ~B()
- c) A()
- A()
- B()
- ~A()
- ~A()
- d) A()
- A()
- B()
- ~B()
- ~B()

No, the answer is incorrect.
Score: 0
Accepted Answers:
4) Consider the program below.

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

class A {
public:
    virtual void f1() { cout << "A::f1" << endl; }
    void f2() { cout << "A::f2" << endl; }
};

class B : public A {
public:
    void f1() { cout << "B::f1" << endl; }
    virtual void f2() { cout << "B::f2" << endl; }
};

class C : public B {
public:
    void f1() { cout << "C::f1" << endl; }
    void f2() { cout << "C::f2" << endl; }
};

int main() {
    B *b = new C();
    b->f1();
    b->f2();

    return 0;
}
```

What will be the output of the above code.

- a) A::f1
- A::f2
- B::f1
- B::f2
- C::f1
- C::f2
- d) B::f1
- B::f2

No, the answer is incorrect.
Score: 0
Accepted Answers:
- c) C::f1
- C::f2
5) Consider the program below.

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

class A { public: int a = 5; };
class B { public: int b = 8; };
class C { public: double c = 5.8; };

int main()
{
    A t1;
    A *p = &t1;
    B *q = (B*)p;
    C *r = (C*)p;

    cout << p->a << endl;
    cout << q->b << endl;
    cout << r->c << endl;

    return 0;
}
```

What will be output / error?

- a) 5
- b) 5 <garbage-value>
- c) 5 8 5.8
- d) 5 <garbage-value> <garbage-value>

No, the answer is incorrect.
Score: 0
Accepted Answers:
- a) 5 5 <garbage-value>
6) Consider the following program.

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

class Base {
public:
    virtual void f() = 0;
};

class Derived : public Base {
public:
    void f() {
    #Line-1
        cout << "Derived" << endl;
    }
};

void Base::f() {
    cout << "Base" << endl;
}

int main() {
    Base *b = new Derived();
    b->f();

    return 0;
}
```

Choose the correct missing statement/s at LINE-1 such that it will print

- Base
- Derived

- a) Base::f();
- b) Base.f();
- c) using Base::f();
- d) Base b; b.f();

No, the answer is incorrect.
Score: 0
Accepted Answers:
- a) Base::f();
7) Consider the program below.

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

class Base {
public:
    void f() { cout << "Base" << endl; }
};

class Derived1 : public Base {
public:
    void f() { cout << "Derived1" << endl; }
};

class Derived2 : public Base {
public:
    void f() { cout << "Derived2" << endl; }
};

class ReDerived : public Derived1, public Derived2 {
public:
    using Base::f;
};

int main() {
    ReDerived *b = new ReDerived();
    b->f();
    return 0;
}
```

What will be the output/error we will get?

- a) Base
- b) Derived1
- Derived2
- c) Compile error: 'Base' is an ambiguous base of 'ReDerived'.
- d) Compile error: type 'Base' is not a base type for type 'ReDerived'.

No, the answer is incorrect.
Score: 0
Accepted Answers:
- c) Compile error: 'Base' is an ambiguous base of 'ReDerived'.

8) Consider the following program.

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

class cls1 {
public:
    virtual void f() = 0;
};

class cls2 {
public:
    void g() {
        cout << "cls2" << endl;
    }
};

int main() {
    cout << sizeof(cls1) << " " << sizeof(cls2) << endl;

    return 0;
}
```

What will be the output? (if sizeof(void*) = 8)

- a) 8 0
- b) 8 1
- c) 1 1
- d) 8 8

No, the answer is incorrect.
Score: 0
Accepted Answers:
- b) 8 1
9) Consider the following program.

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

class A {
    int x = 0;
    public:
        void getVal() { cout << x + 5 << endl; }
};

class B : public A {
    int x = 5;
    public:
        void getVal() { cout << x + 5 << endl; }
};

int main() {
    A *a = new B();
    a->A::getVal();

    return 0;
}
```

What will be the output/error?

- a) 5
- b) 10
- c) Compilation Error: cannot be called A::getVal using pointer of class A.
- d) 0

No, the answer is incorrect.
Score: 0
Accepted Answers:
- a) 5
What is the output of the following program?

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

class Base {
public:
    virtual void f() { cout << "Base::f()\n"; }
    void g() { cout << "Base::g()\n"; }
};

class Derived : public Base {
public:
    void f() { cout << "Derived::f()\n"; }
    virtual void g() { cout << "Derived::g()\n"; }
};

int main() {
    Base b;
    Derived d;

    b = d;       // LINE-1
    b.f();
    b.g();

    Base & rb = d; // LINE-2
    rb.f();
    rb.g();

    return 0;
}
```

- a) Derived::f()
  Derived::g()
  Derived::f()
  Base::g()
- b) Base::f()
  Base::g()
  Derived::f()
  Derived::g()
- c) Derived::f()
  Derived::g()
  Derived::f()
  Derived::g()
- d) Base::f()
  Base::g()
  Derived::f()
  Base::g()

No, the answer is incorrect.
Score: 0
Accepted Answers:
- d) Base::f()
  Base::g()