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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » **Programming in C++ (course)**[Announcements \(announcements\)](#) **[About the Course \(preview\)](#)** [Ask a Question \(forum\)](#)[Progress \(student/home\)](#) [Mentor \(student/mentor\)](#)

Unit 8 - Week 6

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

- Module 26 :
Dynamic Binding
: Part I (Lecture
41) (unit?
unit=72&lesson=73)
- Module 27 :
Dynamic Binding
(Polymorphism)
: Part II (Lecture
42) (unit?
unit=72&lesson=74)

Assignment 6

Your last recorded submission was on 2020-10-27, 13:13 IST **Due date: 2020-10-28, 23:59 IST.**

Module 28 :
Dynamic Binding
(Polymorphism)
: Part III (Lecture
43) (unit?
unit=72&lesson=75)

Module 29 :
Dynamic Binding
(Polymorphism)
Part IV (Lecture
44) (unit?
unit=72&lesson=76)

Module 30 :
Dynamic Binding
(Polymorphism)
: Part V (Lecture
45) (unit?
unit=72&lesson=77)

Lecture
Materials (unit?
unit=72&lesson=78)

Quiz :
Assignment 6
(assessment?
name=163)

W6_Programming-
Qs1
(/noc20_cs57/progassignment?
name=164)

W6_Programming-
Qs2
(/noc20_cs57/progassignment?
name=165)

W6_Programming-
Qs3
(/noc20_cs57/progassignment?
name=166)

W6_Programming-
Qs4
(/noc20_cs57/progassignment?
name=167)

Feedback For
Week 6 (unit?
unit=72&lesson=79)

Week 7

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Assignment Solution

1) Consider the program below.

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

class A {
public:
    void fun1() { cout << "A::fun1" << endl; }
    virtual void fun2() { cout << "A::fun2" << endl; }
};

class B : public A {
public:
    void fun1() { cout << "B::fun1" << endl; }
    void fun2() { cout << "B::fun2" << endl; }
};

int main() {
    A *t = new B();

    t->fun1();
    t->fun2();

    return 0;
}
```

What will be the output?

- ☒ a) A::fun1
B::fun2
- ☐ b) A::fun1
A::fun2
- ☐ c) B::fun1
B::fun2
- ☐ d) B::fun1
A::fun2

2)

2 points

2 points

Books**Live Interactive
Session**

Consider the following program.

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

class Myclass {
public:
    virtual void fun() = 0;
};

void Myclass::fun() {                // LINE-1
    cout << "Pure virtual function";
}

int main() {
    Myclass m;                      // LINE-2
    Myclass *p = new Myclass();     // LINE-3

    p->fun();                        // LINE-4

    return 0;
}
```

The given program does not compile. Identify the correct reason/s.

- ☐ a) LINE-1: Pure virtual function in **Base** cannot have a body
- ☒ b) LINE-2: Cannot instantiate abstract class
- ☒ c) LINE-3: Invalid operator new expression for abstract class type
- ☐ d) LINE-4: Cannot de-reference a null pointer

3) What will be the output of the following program?.

2 points

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

class base {
public:
    virtual void fun() { cout << "base::fun" << endl; }
};

class derived : public base {
public:
    void fun() { cout << "derived::fun" << endl; }
};

int main() {
    derived t1;
    base *t2 = new derived();
    base *t3 = &t1;

    t2->fun();
    t3->fun();

    return 0;
}
```

- ☐ a) base::fun
base::fun
- ☐ b) base::fun
derived::fun
- ☒ c) derived::fun
derived::fun
- ☐ d) derived::fun
base::fun

4)

2 points

What will be the output of the below program?

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

int x = 0;

class myClass {
public:
    myClass() { x++; }
    ~myClass() { x--; }
};

class test : public myClass {
public:
    test() { x += 5; }
    ~test() { x -= 2; }
};

void fun() {
    test t;
    myClass *t1 = new test();

    cout << x << " ";

    delete t1;
}

int main() {
    fun();

    cout << x;

    return 0;
}
```

- ☒ a) 12 8
- ☐ b) 12 6
- ☐ c) 10 8
- ☐ d) 10 6

5) Consider the following program.

2 points

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

class X {
public:
    virtual void fun() { }
};

class Y : public X {
public:
    void fun(int i) { }
};

int main() {
    Y t1;
    X *t2 = new Y();

    t1.fun();           // LINE-1
    t1.fun(3);          // LINE-2
    t2->fun();           // LINE-3
    t2->fun(3);          // LINE-4

    return 0;
}
```

Which line/lines will give you error?

- ☒ a) LINE-1
- ☒ b) LINE-2
- ☐ c) LINE-3
- ☒ d) LINE-4

6) Consider the program below.

2 points

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

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

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

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

int main() {
    A *t1 = new C;

    delete t1;

    return 0;
}
```

What will be the output?

- ☐ a) A B C ~C ~B ~A
- ☐ b) A B C ~C ~B
- ☐ c) A B C ~B ~A
- ☒ d) A B C ~A

7) Consider the program below.

2 points

```
#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() {
    A *a = new C();

    a->f1();
    a->f2();

    return 0;
}
```

What will be the output of the above code.

- ☐ a) A::f1
B::f2
- ☐ b) B::f1
C::f2
- ☐ c) A::f1
C::f2
- ☒ d) C::f1
A::f2

8)

2 points

Consider the following program.

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

class A {
    int a;
public:
    A(int i) : a(i) { }
    virtual void fun(A *) { cout << a << endl; }
};

class B : public A {
    int b;
public:
    B(int i = 0, int j = 0) : A(i), b(j) { }
    void fun(B *) { cout << b << endl; }
};

int main() {
    A *t1 = new B(1, 2);

    t1->fun(new B);          // LINE-1

    return 0;
}
```

What will be the output?

- ☐ a) 0
- ☒ b) 1
- ☐ c) 2
- ☐ d) garbage

9)

2 points

Identify the abstract class/es from the following code snippet.

```
class Flower {
public:
    virtual void Petals() = 0 { cout << "Flower"; }
};

class FlowerWSmell : public Flower {
    void Petals() { cout << "Flower with smell"; }
};

class FlowerWOSmell : public Flower { };

class Rose : public FlowerWSmell {
public:
    void Petals() { cout << "Rose Flower"; }
};

class Jasmine : public FlowerWSmell {
public:
    void Petals() { cout << "Jasmine Flower"; }
};

class Sunflower : public FlowerWOSmell {
public:
    void Petals() { cout << "Sunflower flower"; }
};

class Hibiscus : public FlowerWOSmell { };
```

- ☐ a) Flower, FlowerWSmell, FlowerWOSmell
- ☒ b) Flower, FlowerWOSmell, Hibiscus
- ☐ c) Flower, FlowerWSmell, FlowerWOSmell, Sunflower
- ☐ d) Flower

You may submit any number of times before the due date. The final submission will be considered for grading.

Submit Answers

