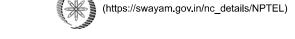
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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Fundamentals of Object Oriented Programming (course)

Announcements (announcements) About the Course (preview) Q&A (forum) Progress (student/home) Mentor (student/mentor)

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(https://examform.nptel.ac.]n/2025\_01/Weekshapard/Assignment 1

The due date for submitting this assignment has passed.

Due on 2025-02-05, 23:59 IST.

If already registered, click to check your payment status

Course outline

**About NPTEL ()** 

Assignment submitted on 2025-02-01, 16:27 IST

1) Which of the following OOP principles ensures that a derived class can modify behavior inherited from a base class?

Inheritance

Abstraction

Encapsulation

https://onlinecourses.nptel.ac.in/noc25 cs34/unit?unit=18&assessment=20

1 point

## How does an NPTEL online course work? ()

## Week 0 ()

## Week 1 ()

- Introduction to Object-Oriented Programming (unit?unit=18&lesson=19)
- Introduction to Classes and Objects in C++ (unit? unit=18&lesson=28)
- Introduction to Member
   Data and Member
   Functions in C++ (unit?
   unit=18&lesson=29)
- Introduction to Classes and Objects in Java (unit? unit=18&lesson=30)
- Introduction to Paradigms of OOP (unit? unit=18&lesson=31)
- Quiz: Week 1: Assignment 1 (assessment?name=20)
- Solution for Week 1 (unit? unit=18&lesson=92)

Week 2 ()

Week 3 ()

Polymorphism	
Yes, the answer is correct. Score: 1	
Accepted Answers: Polymorphism	
2) Which of the following is not a characteristic of object-oriented programming?	1 point
<ul> <li>Encapsulation</li> </ul>	
OPolymorphism	
Functional composition	
○ Inheritance	
Yes, the answer is correct. Score: 1	
Accepted Answers: Functional composition	
3) If a class is considered a "set" in mathematical terms, which of the following could be considered as objects?	1 point
Functions defined on the set	
Elements of the set	
○ Subsets of the set	
Realized instances of the set (e.g., empty set)	
No, the answer is incorrect. Score: 0	
Accepted Answers: Realized instances of the set (e.g., empty set)	
4) Encapsulation can be mathematically represented as:	1 point
f:X o Y where $X$ and $Y$ represent private and public data, respectively.	

Week 4 ()
Week 5 ()
Week 6 ()
Week 7 ()
Week 8 ()
Week 9 ()
Week 10 ()
Week 11 ()
Week 12 ()
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```
\widetilde{X}=Y implying data and methods are the same.
```

 $\widehat{f}:X o X$  where f is a structure-preserving map over private data.

Yes, the answer is correct.

Score: 1

Accepted Answers:

 $f: X \to Y$  where X and Y represent private and public data, respectively.

5) Which of the following best describes polymorphism in a mathematical sense?

1 point

Multiple functions  $f_1:A o B, f_2:C o D$ , etc., with the same name but possibly independent input-output types.

A single function f defined as  $f:A\to B$  and  $f:C\to D$ , operating across different domains and codomains.

A function  $f:A \to A$  that maps elements within the same domain and codomain.

A composite function  $f \circ q: X \to Y$ , where  $q: X \to Z$  and  $f: Z \to Y$ , used to chain operations.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Multiple functions  $f_1:A\to B,\,f_2:C\to D$ , etc., with the same name but possibly independent input-output types.

6) Inheritance in OOP is most analogous to:

1 point

- Set theory: Subsets inheriting properties of supersets.
- Group theory: Groups inheriting properties of subgroups.
- Graph theory: Nodes inheriting edges.
- Linear algebra: Matrices inheriting vector spaces.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Set theory: Subsets inheriting properties of supersets.

7) Which of the following best encapsulates the core purpose of object-oriented programming?	1 point
Maximizing code reuse and scalability.	
Simplifying logical flow in functional applications.	
Optimizing mathematical operations on datasets.	
Ensuring type safety at runtime.	
Yes, the answer is correct. Score: 1	
Accepted Answers:	
Maximizing code reuse and scalability.	
8) In an object-oriented system, relationships between objects are best modeled as:	1 point
Directed graphs	
Bipartite graphs	
Sets with cardinality constraints	
Undirected graphs	
Yes, the answer is correct. Score: 1	
Accepted Answers:	
Directed graphs	
9) Which of the following best explains the idea of abstraction in OOP?	1 point
Hiding unnecessary details and showing only the relevant features.	
A mapping between two completely unrelated concepts.	
Operation of the property of t	
Combining unrelated objects into a single type.	
Yes, the answer is correct. Score: 1	
Accepted Answers:	
Hiding unnecessary details and showing only the relevant features.	

10) Polymorphism in OOP is analogous to which of the following concepts?	1 point
A function that behaves differently depending on the input.	
Using the same name for multiple variables in a program.	
A method that only works with one specific type of data.	
Changing the internal logic of a program without altering its behavior.	
Yes, the answer is correct. Score: 1	
Accepted Answers:	
A function that behaves differently depending on the input.	