RV College of Engineering

Academic

Academic year 2023-2024 (Even Sem)

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

Date	22/06/2024	Maximum Marks	100
Course Code	21IS55B1	Duration	90 Min
Sem	II	CIE II	
UG/PG	UG	Faculty: Dr. Vanishree K	

PROGRAMMING LANGUAGE COURSE
(Introduction to C++ Programming)

Q. No.	Questions	M	BT	CO
1.a	Differentiate the relation between Structures and classes with suitable examples.	04	L2	CO1
1.b.	Discuss the various methods of assigning values to constructors that only accept one parameter.	06	L2	CO1
2.a.	Briefly explain the passing and returning of objects in C++ functions with examples.	06	L2	C02
2.b.	Describe the mechanism of creating static data members with an example program.	04	L2	CO2
3.	Design and implement a C++ program using class to process Shopping list for a departmental store. The list include details such as the Code No., Name, Price of each item and operations like adding, deleting items to the list and printing the total value of an order.	10	L3	CO3
4.a.	Through examples of programs and their results illustrate how constructors and destructors behave.	06	L2	CO1
4.b	Demonstrate the use of INLINE functions with proper syntax.	04	L2	CO2
5.a.	Explain the differences between base class access control mechanisms that are private, public, and protected.	06	L2	CO1
5.b	Elaborate on how multiple classes can be inherited through relevant example.	04	L2	CO2

BT-Blooms Taxonomy, CO-Course Outcomes

	Particulars		CO1	CO2	CO3	CO4	CO5	L1	L2	L3	L4	L5	L6
Marks Distribution	Test	Max Marks	22	18	10	--	--	--	36	14	-	-	-

Course Outcomes:	
CO1:	Exhibit program design and implementation competence through the choice of appropriate object oriented concept and explain the benefits of the same.
CO2:	Design and analyse the classes and objects using object oriented programming paradigm, for real world case studies.
CO3:	Implement the solutions for real-time problems using Object Oriented concepts.
CO4:	Apply and analyze the advanced features of C++ specifically templates and operator overloading which influences the performance of programs.

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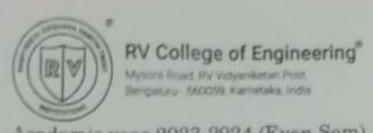
Academic year 2023-2024 (Even Sem)

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

Date	03/07/2024	Maximum Marks	50+10
Course Code	IS125AID	Duration	120 Min
Sem	II	Improvement CIE	
UG/PG	UG	Faculty: Dr. Vanishree K	

PROGRAMMING LANGUAGE COURSE
(Introduction to C++ Programming)

Q. No.	PART-A QUIZ	M	BT	CO
1.	Mention two mechanisms followed for achieving compile time polymorphism.	02	L1	CO1
2.	How many arguments are required in the definition of an overloaded unary operator? Explain.	02	L2	CO1
3.	What is an exception in C++ program? Give a suitable example for it.	02	L1	CO2
4.	Give the syntax and an example for a pure virtual function.	02	L2	CO2
5.	Can classes be passed as arguments in exception handling using throw? Justify.	02	L2	CO2

Q. No.	PART-B TEST	M	BT	CO
1.	Write a C++ program to overload the function "sumnum" which adds two, three, four and five integer values.	10	L3	CO2
2.a.	Write a C++ program to demonstrate try, throw and catch blocks.	06	L3	CO1
2.b.	Distinguish between Static & Dynamic Polymorphism with examples.	04	L2	CO1
3.	Design and implement a C++ program to create an abstract class - SHAPE to represent any shape in general. The class should have two pure virtual functions to read dimensions and to compute the area. Create three derived classes - CIRCLE, RECTANGLE, and SQUARE by inheriting the features of class SHAPE. Implement the functions to read and compute the area. Add constructors, method to display the results as required. (Assume appropriate attributes).	10	L3	CO3
4.a.	With an example, explain the use of terminate() and unexpected() functions.	06	L2	CO2
4.b.	Describe the significance of default function arguments in C++ programming.	04	L2	CO1
5.	Illustrate the role of Virtual Functions and Abstract Classes with suitable examples for each.	10	L2	CO4

BT-Blooms Taxonomy, CO-Course Outcomes

	Particulars		CO1	CO2	CO3	CO4	CO5	L1	L2	L3	L4	L5	L6
Marks Distribution	Test	Max Marks	14	16	10	10	-	-	24	26	-	-	-

PART-A

1.1	Distinguish between Procedure oriented programming and object oriented programming	02
1.2	Name the data type which is used to verify the true or false condition in $C++$ programming.	01
1.3	A _____ is a function that isn't a member of a class but has access to the class's private and protected members.	01
1.4	_____ operator is used to define a member function outside the class.	01
1.5	Identify the feature of $C++$ where a class can inherit from more than one classes.	01
1.6	Which is a process of hiding unnecessary data and showing only relevant data?	01
1.7	Illustrate the role of a constructor in class with a suitable example.	0
1.8	Why do we need to handle exceptions? Give example.	0
1.9	Mention the template class which has the contiguous memory locations when initiated.	0

PART-B

a	Explain in detail the general form of a $C++$ Program with a suitable example.
	Illustrate the categories of operators with suitable examples for each.

Elaborate on the behavior of constructors and destructors with sample programs and their output.

Example the usage of inline functions and friend functions within a class through examples.

OR

Explain the following with relevant examples.

i)   Passing objects to functions
ii) Returning objects
iii) Object assignment
iv) Local classes

Differentiate between structures and classes with suitab examples.

5	a	Explain the role of the following: i) Virtual functions ii) Abstract classes	10	3	3
	b	Discuss the importance of default function arguments in C++ programming	04	2	3

OR

6	a	Write a C++ program to illustrate the operator overloading mechanism.	08	3	1
	b	Distinguish between static and dynamic polymorphism with suitable examples for each.	06	2	3
7	a	Using an appropriate example, demonstrate the working of multiple catch statements dealing with exceptions.	10	2	3
	b	Elaborate on the use of unexpected () function with a suitable example.	04	3	4

OR

8	a	Use appropriate examples to explain the process of handling the derived class exception.	08	2	3
	b	Write a C++ program to demonstrate try, throw and catch blocks.	06	3	4
9	a	With an example, explain compile-time polymorphism in detail.	08	2	3
	b	Elaborate on template class "list" with the help of an example.	06	3	4

OR

10	a	Write a template function to find the maximum number from a template array of size N.	10	3	4
	b	Write a short note on iterators in Standard Template Library (STL) in C++ programming.	04	2	4

LAB COMPONENT

	a	Design and implement a class STUDENT with attributes like: roll number, name, 3 tests mark. Implement member functions for the following: i) To read student data like name and test marks, ii) To compute average marks (considering best two out of three test marks) and iii) To display the student information. Declare an array of STUDENT objects in the main function, use static data member to generate unique student roll number.	10	3	3
	b	Design and implement a C++ program to create an abstract class: SHAPE to represent any shape in general. The class should have two pure virtual functions to read dimensions and to compute the area. Create three derived classes CIRCLE, RECTANGLE, and SQUARE by inheriting the features of class SHAPE. Implement the functions to read and compute the area. Add constructors, method to display the results as required. (Assume appropriate attributes).	10	3	3