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UPES
End Semester Examination, May 2023

Course: Introduction To Game Programming	Semester: IV
Program: B.Tech CSE GG H+NH	Time : 03 hrs.
Course Code: CSGG 2007	Max. Marks: 100

Instructions: Start new questions with new page. For section A question do not write more than 2-3 lines in answer.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Write The output of the following program: <pre>#include <iostream> void volatile() { static int c = 0; c++; std::cout << "C: " << c << std::endl; } int main() { volatile(); volatile(); volatile(); return 0; }</pre>	4	CO1
Q 2	Write the output of the following program: <pre>#include <iostream> int main() { int i; for (i =5; i-- ;i <5) std::cout << i << std::endl; std::cout << "Value of i after loop: " << i << std::endl; return 0; }</pre>	4	CO1
Q 3	Assuming ideal conditions throughout a single elimination tournament, where 2^n teams participate and n is a natural number greater than 0, what is the total number of matches required to determine the winner of	4	CO2

	the tournament? The tournament follows the rule that a team is eliminated from the tournament after losing a match.		
Q 4	What are the various types of inheritance that can be used in C++, and how do they differ from one another?	4	CO2
Q 5	What is your opinion on the statement that a game can be broadly categorized into two genres based on its key elements, namely gameplay and story, and can you provide examples to support your argument?	4	CO3
SECTION B (4Qx10M= 40 Marks)			
Q 6	<p>A Developer wrote a C++ class for playing cards as given below:</p> <pre>class Card{ char suit;//card color: 'd' for diamond, 'c' for club, 's' for spade and 'h' //for heart char value;//numeric values from A,2,3,4,5,6,7,8,9,10,J,Q,K public: Card(char s, char v) { suit = s; value = v };</pre> <p>Assuming that, spade > diamond > club > heart, overload '<' and '>' operator. Make all the required change in the class.</p>	10	CO3
Q 7	<p>Create a function destroyAllInstances() inside a C++ class Spider written below. The function should be able to remove all the alive Spider objects by a single call. Modify the class as per requirement.</p> <pre>class Spider { int speed; int range; public: Spider() { speed = 5; //default speed range = 4; //default range } };</pre>	10	CO1
Q 8	Justify the scenarios where it is or not a good practice to include the code section that increases the score when the main character touches the collectible, inside the destructor of the collectible object in a C++ game that involves a main character with shooting ability, enemies with shooting abilities, and collectibles that can be destroyed either by touching them or by being hit by a bullet?	10	CO2
Q 9	Assuming you have defined an abstract class Shape in C++ with a pure virtual function for calculating area, and have extended this class to create various sub-classes like Rectangle and Triangle, write a program	10	CO3

	<p>that creates an array of pointers to the Shape class and then uses these pointers to calculate and display the area of each shape in the array.</p> <p style="text-align: center;">OR</p> <p>Please write a function in your preferred programming language that calculates the mid-point vector of two vectors v1 and v2 instances of a vec2 class, assuming that the required accessors and mutators for the vec2 class are provided.</p>		
<p>SECTION-C (2Qx20M=40 Marks)</p>			
Q 10	<p>Suppose you have been tasked with developing a new video game based on your original ideas. Please provide a summary of your game idea and describe each aspect of the game, including Story, Gameplay, Graphics and Animation, and Theme, in detail. Additionally, please highlight any unique or innovative features of your game concept.</p> <p style="text-align: center;">OR</p> <p>Do the following:</p> <ol style="list-style-type: none"> 1. Choose a game from any platform (PC, console, mobile, etc.) 2. Provide a detailed analysis of the game's genre, including: <ul style="list-style-type: none"> o Description of the game mechanics o Discussion of unique gameplay features and story elements within the genre o Identification of strengths and weaknesses of the game within its genre o Comparison of the game to other games within the same genre 3. Discuss why the game has been successful (or unsuccessful) within its genre 4. Explain how the game has impacted the gaming industry. 	20	CO4
Q 11	<p>Write a C++ program to create a jumble word solver that reads words from a dictionary file "Dictionary.txt" and allows the user to input a scrambled word. The program should output all possible unscrambled words from the dictionary that can be formed using the letters of the scrambled word. Use appropriate data structures and algorithms to efficiently search for the unscrambled words.</p>	20	CO5