LOVELY PROFESSIONAL UNIVERSITY

Academic Task No. 1

School of Computer Applications **Faculty of** Technology & Sciences

Name of the faculty member Ms. Kanika Sharma

Course Code: CAP 445 **Course Title: Object Oriented Programming lab**

Max. Marks: 30 **Is Rubric Applicable:** _NA___

Date of Allotment: 22-Sep-2021 **Date of Submission: 30-Sep-21**

Important Guidelines:

1. All questions in this Academic Task are compulsory.

2. It is mandatory to attempt all questions of the assignment in your own handwriting on A4 size sheets/pages with a blue colour ink pen. Any other mode of attempt (typed or printed codes or table) except hand written/drawn will not be accepted/considered as valid submission(s) under any circumstances.

3. Every attempted sheet/page should carry clear details of student such as Name, Registration number, Roll number, Question number and Page number. The page numbers should be written clearly on the bottom of every attempted sheet in a prescribed format as: for page 1; **Page 1 of 4**, for page 2; **Page 2 of 4**, for page 3; **Page 3 of 4** and for page 4; **Page 4 of 4**, in case your assignment/document is of 4 pages.

4. After attempting the answer(s), student needs to take photograph of each of these answer sheets/pages and needs to convert the **jpeg** format images into a sequential single **pdf** format document (can be done with many free online available converters).**Documentation of the code is necessary.**

5. This PDF file should be uploaded onto the UMS interface on or before the last date of the submission.

6. Refrain from indulging into plagiarism as copy cases will be marked zero.

S. No.	SET	Objectives of Academic Activity	Topic/Question Details	Evaluation Parameters	Expected Outcomes
1	SET A	understand the concepts of object-oriented programming distinguish between the procedure-oriented and object-oriented programming language	1. Implement using classes. Create a function that takes an array of numbers between 1 and 10 (excluding one number) and returns the missing number. Example: missingNum([1, 2, 3, 4, 6, 7, 8, 9, 10]) ➞ 5 2. A person having account in a bank. His balance in bank account is 50000. He is also getting 2000 Rs. from PM Fund every month and 5% of interest on the amount saved quarterly. Create one application where you have applied the concept of multiple inheritance which will display extra amount he is getting annually? 3. You work in a toy car workshop, and your job is to build toy cars from a collection of parts. Each toy car needs 4 wheels, 1 car body, and 2 figures of people to be placed inside. Given the total number of wheels, car bodies and figures available, how many complete toy cars can you make?	10 marks per question	

2	B	understand the concepts of object-oriented programming
		
		distinguish between the procedure-oriented and object-oriented programming language
			1. Using classes Your job is to create a function, that takes 3 numbers: a, b, c and returns true if the last digit of a * b = the last digit of c. Check the examples below for an explanation.
			
			Example:
			
			lastDig(25, 21, 125) ⟶ true
			
			// The last digit of 25 is 5, the last digit of 21 is 1, and the last
			
			// digit of 125 is 5, and the last digit of 5*1 = 5, which is equal
			
			// to the last digit of 125(5).
			
			2. Write a program in C++, define a Employee class with employee id, Name and department. Define one function to find the highest and lowest paid salary to employees.
			3. Create a function which validates whether a bridge is safe to walk on (i.e. has no gaps in it to fall through).
			Example:
			isSafeBridge("####") ⟶ true
			
			isSafeBridge("## ####") ⟶ false
			
			isSafeBridge("#") ⟶ true
				10 marks per question	

3	C	understand the concepts of object-oriented programming distinguish between the procedure-oriented and object-oriented programming language	1. Implement using classes. Create a function that takes an array of numbers and returns an array where each number is the sum of itself + all previous numbers in the array. Example: cumulativeSum([1, 2, 3]) → [1, 3, 6] 2. Suppose you are trying to watch some lectures to study for your next exam but you keep getting distracted by meme compilations, adds, songs, promos on your favorite video platform. Your job is to create a function that takes a string and checks to see if it contains the following words or phrases: • "songs” • "meme" • "adds" • "promos" If it does, return "NO!". Otherwise, return "Safe watching!" 3. Write a program to overload all unary operators using constructor overloading also implement constructor with default argument.	10 marks per question	

4	D	understand the concepts of object-oriented programming distinguish between the procedure-oriented and object-oriented programming language	1. An employee working at a very bizzare company, earns one penny on their first day. However, for every day that passes, their base amount doubles, so they earn two pennies on the second day and four pennies on the third day (totalling 7 pennies). Given a number of days, return how many pennies the employee accumulates. Implement the program using classes. 2. Imagine a tollbooth at a bridge. Cars passing by the booth are expected to pay a Rs. 50 toll. Mostly they do, but sometimes a car goes by without paying. The tollbooth keeps track of the number of cars that have gone by, and of the total amount of money collected. 3. Create a function which simulates the game "rock, paper, scissors". The function takes the input of both players (rock, paper or scissors), first parameter from first player, second from second player. The function returns the result as such: "Player 1 wins" "Player 2 wins" "TIE" (if both inputs are the same) The rules of rock, paper, scissors, if not known: Both players have to say either "rock", "paper" or "scissors" at the same time. Rock beats scissors, paper beats rock, scissors beat paper.	10 marks per question	

5	E	understand the concepts of object-oriented programming distinguish between the procedure-oriented and object-oriented programming language	1. Implement the concept of classes to create a function that takes the number of wins, draws and losses and calculates the number of points a football team has obtained so far. • wins get 3 points • draws get 1 point • losses get 0 points 2. Create a class product; take appropriate data members and functions which calculate net profit for a product after selling the product. 3. Suppose there is Bank and there are different branches in Jalandhar, Phagwara, Hoshiarpur etc. President of the Bank want to know about the detail of the branch managers who has more working experience. Write a program using the concept of inheritance.	10 marks per question	

6	F	understand the concepts of object-oriented programming distinguish between the procedure-oriented and object-oriented programming language	1. A person having account in a bank. His balance in bank account is 50000. He is also getting 2000 Rs. from PM Fund every month and 5% of interest on the amount saved quarterly. Create one application where you have applied the concept of multiple inheritance which will display extra amount he is getting annually? 2. Create a class employee to accept the various details of the employee. Also find the highest paid employee in the company. Write this program with the help of hybrid inheritance using four classes & derivation mode must be protected. 3. sums the total number of digits between two numbers, inclusive. For example, between the numbers 19 and 22 we have: Example: // 19, 20, 21, 22 (1 + 9) + (2 + 0) + (2 + 1) + (2 + 2) = 19 Create a class and make appropriate data members and member functions. 4.	10 marks per question	

7	G	understand the concepts of object-oriented programming distinguish between the procedure-oriented and object-oriented programming language	1. Write a program in C++, define a Employee class with employee id, Name and department. Define one function to find the highest and lowest paid salary to employees. 2. You have to generate restaurant bill for a customer with the details as give below: Customer ID, Customer Name, Customer Address, and Contact No. Total payable amount. Create a proper menu of ten items display rate of each item. Generate the bill as the customer order the item as per quantity. Implement operator overloading 3. Write a program to implement hierarchical inheritance using five classes & derivation mode must be private. All the classes must represent student information.	10 marks per question	

Student List

SerialNo	RegisterationNumber	Name	RollNumber	SET
1	12111600	Shyam Kumar	RD2112B100	E
2	12108245	Abhay Kumar	RD2112B101	D
3	12111879	Sunita	RD2112B107	G
4	12111883	Muskan	RD2112B108	A
5	12111974	Pallavi	RD2112B109	F
6	12112027	Ajay Singh	RD2112B110	B
7	12112029	Aparna	RD2112B111	C
8	12112710	Pradeep Harijan	RD2112B112	E
9	12112715	Vishal Pratap Singh	RD2112B113	D

10	12105488	Amresh Kumar	RD2112B120	G
11	12100159	Aaditya Tyagi	RD2112B121	A
12	12105222	MD Imran Sharif	RD2112B122	F
13	12113473	Kushagra Sharma	RD2112B123	B
14	12113537	Sandeep kaur	RD2112B124	C
15	12113539	SAPHIR SOUAIBOU MOHAMED	RD2112B125	E
16	12108502	Adarsh Kumar	RD2112B45	D
17	12108691	Jain Harshitkumar Gopalbhai	RD2112B46	G
18	12108696	Vashi Dattpalsinh Ajitsinh	RD2112B47	A
19	12108739	Reza Yawari	RD2112B49	F
20	12108676	Deepak Dhan	RD2112B50	B
21	12107456	Shubham Khosla	RD2112B54	C
22	12107507	Jasmeen	RD2112B55	E
23	12107974	Sirjanpreet Kaur	RD2112B56	D
24	12107695	Jobin S	RD2112B58	G
25	12108193	Md.Ghulam Azad Ansari	RD2112B59	A
26	12108151	Aditya Singh	RD2112B60	F
27	12108195	Afsar Alam	RD2112B61	B
28	12108205	Gangadhari Sai Kiran	RD2112B62	C
29	12108235	Santosh Kumar	RD2112B63	E
30	12108247	Saksham Arora	RD2112B65	D
31	12108142	Irshad Khazir Bhat	RD2112B66	G
32	12108134	Vishal Kumar	RD2112B67	A
33	12108164	Anchal Gupta	RD2112B68	F
34	12108089	Shubham Kumar	RD2112B69	B
35	12108080	Shivam Kumar	RD2112B70	C
36	12108071	Maulik Jain	RD2112B71	E
37	12108052	Deepak Vishwakarma	RD2112B72	D
38	12108329	Shreyansh Shekhar	RD2112B73	G
39	12108305	Krishna Kumar	RD2112B74	A
40	12108372	Shalini kumari	RD2112B75	F
41	12108423	Megha Garhkoti	RD2112B77	B

42	12108382	Akash Raj	RD2112B78	C
43	12108385	Ms. Bhawna Kewlani	RD2112B79	E
44	12108389	Vasisth Roy	RD2112B80	D
45	12108348	Aniket Kumar	RD2112B81	G
46	12108465	Akanksha	RD2112B83	A
47	12108451	Shubham Raj Keshri	RD2112B84	F
48	12108480	Nitin Agrahari	RD2112B86	B
49	12108481	Shiv Sundar Das	RD2112B87	C
50	12106006	Astuti	RD2112B88	E
51	12108565	Krrish Kumar	RD2112B89	D
52	12110903	Mohammad Suliman Joya	RD2112B90	G
53	12103717	Apurwa	RD2112B91	A
54	12110950	Pushkar Dahal	RD2112B92	F
55	12111457	Adarsh Kumar	RD2112B95	B
56	12111523	Rajiv Kumar	RD2112B96	C
57	12111537	Ravi Kumar	RD2112B97	E
58	12111549	Ankit Nayak	RD2112B98	D
59	12111590	Shambhavee Kumari	RD2112B99	G