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**Presidency University**

**Bengaluru**

**School Of Computer Science and Engineering & Information Science**

**Summer Term End-Term Examinations, August 2024**

**Date**: 5-08-2024

**Time**: 9:30am-12:30pm

**Max Marks**: 100

**Weightage**: 50%

**Odd Semester**: 2023 - 24

**Course Code**: CSE2033

**Course Name**: GO Programming

**Department:** Computer Science and Engineering

**Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

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| **Q. No** | **Questions** | **Marks** | **CO** | **RBT** |
| 1 | 1. List the advantages of Golang. Write go code to print index values for the given string array.["apple", "orange", "pineapple"] | 4 | CO1 | L1 |
| 1. Explain for-range with an example. Read a list of integers and find sum of integers using C-style for loop. | 6 | CO1 | L2 |
| 1. Develop a go program to read a three-digit number and reverse the number without using inbuilt functions and explain the structure of Go program. (Write sample input and Output) | 10 | CO1 | L3 |
| OR | | | | |
| 2 | 1. Show a go program to read a string using bufio reader and print each alphabet with help of for-range loop. | 4 | CO1 | L1 |
| 1. Demonstrate a go program to count vowels in a given string. (Write sample input and output). | 6 | CO1 | L2 |
| 1. Develop a go program to print prime numbers between 2 user given integers. (Write sample input and output). | 10 | CO1 | L3 |

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| 3 | 1. Relate array and slices in Go programming with suitable example. | 4 | CO2 | L1 |
| 1. Demonstrate a GO function with one variadic parameter, which accepts a slice and then it finds the greatest number in a list of numbers. (write input and output). | 6 | CO2 | L2 |
| 1. a) Model a Golang program to make a map with covid patient details from a hospital with patient id and age. Assume data is {1001:21, 1002:35, 1003:12, 1004:64, 1005:17, 1006:59, 1007:43........}.  Then write code to make 2 slices from this map, one contains id of young patients less than 18 years old and second one consists of id of senior citizens aged above 60. (Write sample input and output) b) Build a function with a variadic parameter which accepts an array of numbers and then print all prime numbers from the list. (Write sample input and output) | 10 | CO2 | L3 |

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| 4 | 1. Ask the user to input a sentence which contains at-least 4 words. Show a go program to capitalize first letter of each word and display complete sentence. | 4 | CO2 | L1 |
| 1. Given a map of day wise temperature in a week. temp = {"sun":32, "mon":30, "tue":29,"wed":25, "thur":25, "fri":27, "sat":24} Demonstrate a go program which calculate average temperature of the week. | 6 | CO2 | L2 |
| 1. a) Read an English poem for kids using bufio reader and count number of occurrences of each word in the poem. Develop a go code that should store the output in a map like words are keys and counts are values. (Write sample input and output)   b) Develop a Golang program to read complete name of a person. (Name many contain maximum of 4 parts). Capitalize first letter of each word and display complete name. (Write sample input and output) | 10 | CO2 | L3 |

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| 5 | 1. Show a GO program that can swap two integers. Pass pointer parameters. | 4 | CO3 | L1 |
| 1. Let's consider a scenario involving two structs, Car and Bike with attributes Brand, Model(year) and mileage. Both structs will implement a common interface called Vehicle, which defines method for calc\_ mileage. Read Total Distance Travelled and Total Fuel Consumed and print mileage for both vehicles. Develop the go program for the given scenario. (Write sample input and output). | 6 | CO3 | L2 |
| 1. Apply GO methods for Car booking which a user wants to buy in near future. The user should give inputs like model (assume available models are A class, B class and E class) and type (petrol, diesel and electric) and color (grey, silver and black). The program should request advance amount to be paid.  If the user paid amount (assume) booking confirmed. If the particular model/type/color not available then display message "This model not available". Make use of methods for checking model availability, advance payment, booking confirmation and pointers for parameter passing. (Write sample input and output). | 10 | CO3 | L3 |

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| 6 | 1. Recall the syntax to declare pointer in Go. Show a GO function to find square of a number using pointer parameter. | 4 | CO3 | L1 |
| 1. Demonstrate a go method to print details of a bank account. For this make a struct called account with attributes account number, balance, branch code and transaction\_amount. Make another method to update bank balance according to transaction\_amount(credit or debit). The transaction\_amount should read from user. | 6 | CO3 | L2 |
| 1. Apply GO methods in a scenario of ticket booking for a movie show. The user should give inputs like class ( first class,  second class and economy) and number of people. The program should request amount to be paid.  If the user paid amount( assume) allocate seat numbers. If the seat for particular class over display message "No seat in this class", give option to book another class.  If all seats sold, then before taking payment it should  show message "housefull".  Make use of methods for checking seat availability, bill payment,  seat allotment and pointers for parameter passing. (Write sample input and output) | 10 | CO3 | L3 |

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| 7 | 1. Recall Concurrency in GO with an example. | 4 | CO4 | L1 |
| 1. Develop two GO functions called calcCubes() and calcSquare() to calculate sum of cubes of digits and sum of squares of digits respectively. Pass a 3 digit number input from main function. The 2 functions should run concurrently and make use of a GO channel to communicate the sum to main routine. | 6 | CO4 | L2 |
| 1. Make use of container/list package and insert following in same order.                    8, 7,6, 5, 4, 3, 2,1,0,snake,bird,cat. Apply InsertAfter(), PushFront(), PushBack() functions. Finally print the list. | 10 | CO4 | L3 |

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| 8 | 1. Relate Channel Buffering with an example. | 4 | CO4 | L1 |
| 1. Develop a go code to run factorial and palindrome routines concurrently by using GO routines. (write input and output) | 6 | CO4 | L2 |
| 1. Construct a GO program to implement binary search. (Write sample input and output) | 10 | CO4 | L3 |

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| 9 | 1. List the features of Golang. Show a go code to print numbers from 10 to 1 with a delay of 2 second. Use time package of Golang. | 4 | CO1 | L1 |
| 1. Develop a GO program to calculate electricity bill for Metro Electricity Board based on unit consumed (UC) by consumer. The electricity charge is free of cost if UC is less than 200. If UC is between 200 and 300, then each unit costs Rs.10, between 301 to 500, Rs.15 and above 500 units, Rs.25. Print an electricity Bill with split-up of UC, charges and total amount.  Example: If UC is 350, Then total bill be 200\*0 +                                                               100\*10+                                                                50\*15 = Rs.1750  (Write sample input and output) | 6 | CO1 | L2 |
| 1. a) Construct a GO program that prints the numbers from 1 to 100. But for multiples of three, print "Fizz" instead of the number and for" the multiples of five print "Buzz".  For numbers which are multiples of both three and five print "FizzBuzz”.(Write sample input and output)  b) Construct a Go program that uses "for loop" to print the first 10 Fibonacci numbers. The Fibonacci sequence starts with 0 and 1, and each subsequent number is the sum of the two preceding ones. (Write sample input and output) | 10 | CO1 | L3 |

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| 10 | 1. Define closure function with an example. Apply Replace function of string package with an example. | 4 | CO2 | L1 |
| 1. Demonstrate GO map concepts and read 30 students name and CGPA, where name is key and CGPA is value. Iterate this student map using for range loop and print names of student who scored highest CGPA, lowest CGPA and also print names of all students who scored CGPA above 7. (Write sample input and output) | 6 | CO2 | L2 |
| 1. Build a GO program to read a list of integers from the user, name it as input, until the user enters 0. and print it.  Iterate this input list using a for loop and then Create 2 new slices namely,  1). ODD, which store only odd numbers from the input list. 2). Negative, which store only negative numbers from the input list. (Write sample input and output) | 10 | CO2 | L3 |