Q1. A) Write a program in GO language to accept user choice and print answers using arithmetic operators.

Ans-package main

import "fmt"

func main() {

    var num1, num2 float64

    var choice int

    fmt.Print("Enter the first number: ")

    fmt.Scan(&num1)

    fmt.Print("Enter the second number: ")

    fmt.Scan(&num2)

    fmt.Println("\nChoose an operation:")

    fmt.Println("1. Addition (+)")

    fmt.Println("2. Subtraction (-)")

    fmt.Println("3. Multiplication (\*)")

    fmt.Println("4. Division (/)")

    fmt.Print("Enter your choice (1-4): ")

    fmt.Scan(&choice)

    switch choice {

    case 1:

        fmt.Printf("\nResult: %.2f + %.2f = %.2f\n", num1, num2, num1+num2)

    case 2:

        fmt.Printf("\nResult: %.2f - %.2f = %.2f\n", num1, num2, num1-num2)

    case 3:

        fmt.Printf("\nResult: %.2f \* %.2f = %.2f\n", num1, num2, num1\*num2)

    case 4:

        if num2 != 0 {

            fmt.Printf("\nResult: %.2f / %.2f = %.2f\n", num1, num2, num1/num2)

        } else {

            fmt.Println("\nError: Division by zero is not allowed.")

        }

    default:

        fmt.Println("\nInvalid choice! Please choose a valid option (1-4).")

    }

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to blink LED.

c. Write down the observations on Input and Output d. Write down the Result and Conclusion [10 Marks]

Slip 2

Q1. A) Write a program in GO language to print Fibonacci series of n terms.

Ans-package main

import "fmt"

func main() {

    var n int

    fmt.Println("Enter the number of terms in the Fibonacci series:")

    fmt.Scan(&n)

    a, b := 0, 1

    fmt.Println("Fibonacci Series:")

   for i := 0; i < n; i++ {

        fmt.Print(a, " ")

        a, b = b, a+b

    }

    fmt.Println()

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to turn ON/OFF buzzer.

c. Write down the observations on Input and Output d. Write down the Result and Conclusion [10 Marks]

Slip 3

Q1. A) Write a program in the GO language using function to check whether accepts number is palindrome or not.

ANS-package main

import "fmt"

func isPalindrome(num int) bool {

        temp := num

        var reverse int = 0

        for temp > 0 {

                remainder := temp % 10

                reverse = (reverse \* 10) + remainder

                temp /= 10

        }

        return num == reverse

}

func main() {

        number := 121

        if isPalindrome(number) {

                fmt.Println(number, "is a palindrome")

        } else {

                fmt.Println(number, "is not a palindrome")

        }

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to blink LED. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [10 Marks]

Slip 4

Q1. A) Write a program in GO language to print a recursive sum of digits of a given number.

ANS-package main

import "fmt"

func sumOfDigits(n int) int {

        if n == 0 {

                return 0

        }

        return n%10 + sumOfDigits(n/10)

}

func main() {

        num := 12345

        result := sumOfDigits(num)

        fmt.Println("Sum of digits in", num, "is:", result)

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to toggle two LED’s. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [10 Marks]

Slip 5

Q1. A) Write a program in GO language program to create Text file

Ans- package main

import (

"fmt"

"os"

)

func main() {

// Define the file name

fileName := "sample.txt"

// Create the file using os.Create()

file, err := os.Create(fileName)

if err != nil {

fmt.Println("Error creating file:", err)

return

}

// Close the file when the function exits

defer file.Close()

// Write some content to the file

content := "Hello, this is a sample text file created using Go!\nWelcome to file handling in Golang."

// Write the string to the file

\_, err = file.WriteString(content)

if err != nil {

fmt.Println("Error writing to file:", err)

return

}

fmt.Println("File created successfully:", fileName)

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to blink LED. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [10 Marks]

Slip 6

Q1. A) Write a program in GO language to accept two matrices and display its multiplication [20 Marks]

OR

B) Write a program in GO language to copy all elements of one array into another using a method.

ANS-package main

import (

"fmt"

)

// Function to copy elements from source array to destination array

func copyArray(source []int, destination []int) {

for i := 0; i < len(source); i++ {

destination[i] = source[i]

}

}

func main() {

var size int

// Accept the size of the array

fmt.Print("Enter the number of elements in the array: ")

fmt.Scan(&size)

// Declare and initialize the source array

source := make([]int, size)

destination := make([]int, size)

// Accept elements of the source array

fmt.Println("\nEnter elements of the source array:")

for i := 0; i < size; i++ {

fmt.Printf("Element %d: ", i+1)

fmt.Scan(&source[i])

}

// Call the copyArray function to copy elements

copyArray(source, destination)

// Display the copied elements in the destination array

fmt.Println("\nElements of the destination array after copying:")

for i := 0; i < size; i++ {

fmt.Printf("%d ", destination[i])

}

fmt.Println()

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to toggle two LED’s. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [10 Marks]

Slip 7

te a program in GO language to create structure student. Write a method show() whose receiver is a pointer of struct student.

ANS-package main

import (

"fmt"

)

// Define the struct student

type student struct {

rollNo int

name string

marks float64

}

// Method show() with a pointer receiver

func (s \*student) show() {

fmt.Println("\n--- Student Details ---")

fmt.Println("Roll No :", s.rollNo)

fmt.Println("Name :", s.name)

fmt.Println("Marks :", s.marks)

}

func main() {

// Declare a student object

var s student

// Accept student details

fmt.Print("Enter Roll No: ")

fmt.Scan(&s.rollNo)

fmt.Print("Enter Name: ")

fmt.Scan(&s.name)

fmt.Print("Enter Marks: ")

fmt.Scan(&s.marks)

// Call the show() method using pointer receiver

s.show()

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to turn ON/OFF buzzer.

c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [10 Marks]

Slip 8

Q1.

B) Write a program in GO language to create an interface shape that includes area and perimeter. Implements these methods in circle and rectangle type

ANS-package main

import (

    "fmt"

    "math"

)

type Shape interface {

    Area() float64

    Perimeter() float64

}

type Circle struct {

    rad

ius float64

}

type Rectangle struct {

    width, height float64

}

func (c Circle) Area() float64 {

    return math.Pi \* c.radius \* c.radius

}

func (c Circle) Perimeter() float64 {

    return 2 \* math.Pi \* c.radius

}

func (r Rectangle) Area() float64 {

    return r.width \* r.height

}

func (r Rectangle) Perimeter() float64 {

    return 2 \* (r.width + r.height)

}

func main() {

    circle := Circle{radius: 5}

    rectangle := Rectangle{width: 4, height: 6}

    shapes := []Shape{circle, rectangle}

    for \_, shape := range shapes {

        fmt.Printf("Shape: %T\n", shape)

        fmt.Printf("Area: %.2f\n", shape.Area())

        fmt.Printf("Perimeter: %.2f\n\n", shape.Perimeter())

    }

}

.

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to blink LED.

c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [10 Marks]

Slip 9

Q1. A) Write a program in GO language using a function to check whether the accepted number is palindrome or not.

ANS- package main

import "fmt"

func isPalindrome(num int) bool {

        temp := num

        var reverse int = 0

        for temp > 0 {

                remainder := temp % 10

                reverse = (reverse \* 10) + remainder

                temp /= 10

        }

        return num == reverse

}

func main() {

        number := 121

        if isPalindrome(number) {

                fmt.Println(number, "is a palindrome")

        } else {

                fmt.Println(number, "is not a palindrome")

        }

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to blink LED.

c. Write down the observations on Input and Output d. Write down the Result and Conclusion [10 Marks]

Slip 10

Q1

B) Write a program in GO language to read and write Fibonacci series to the using channel.

ANS- package main

import "fmt"

func fibonacci(ch chan<- int, n int) {

    a, b := 0, 1

    for i := 0; i < n; i++ {

        ch <- a

        a, b = b, a+b

    }

    close(ch)

}

func main() {

    n := 10

    ch := make(chan int)

    go fibonacci(ch, n)

    for num := range ch {

        fmt.Println(num)

    }

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option)

b. WAP in python/C++ language to turn ON/OFF buzzer.

c. Write down the observations on Input and Output d. Write down the Result and Conclusion

Slip 11

Q1. A) Write a program in GO language to check whether the accepted number is two digit or not. [20 Marks]

ANS- package main

import (

"fmt"

"math"

)

func main() {

var number int

// Accept a number from the user

fmt.Print("Enter a number: ")

fmt.Scan(&number)

// Take absolute value to handle negative numbers

absNumber := int(math.Abs(float64(number)))

// Check if it is a two-digit number

if absNumber >= 10 && absNumber <= 99 {

fmt.Printf("The number %d is a two-digit number.\n", number)

} else {

fmt.Printf("The number %d is NOT a two-digit number.\n", number)

}

}Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to turn ON/OFF buzzer. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Mark

Slip 12

Q1. A) Write a program in GO language to swap two numbers using call by reference concept [20 Marks]

ANS-package main

import "fmt"

func swap(a, b \*int) {

        temp := \*a

        \*a = \*b

        \*b = temp

}

func main() {

        x := 10

        y := 20

        fmt.Println("Before swapping:", x, y)

        swap(&x, &y)

        fmt.Println("After swapping:", x, y)

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to toggle two LED’s. c. Write down the observations on Input and Output d. Write down the Result and Conclusion

Slip 13

Q1. A) Write a program in GO language to print sum of all even and odd numbers separately between 1 to 100

Ans- package main

import "fmt"

func main() {

var evenSum, oddSum int

for i := 1; i <= 100; i++ {

if i%2 == 0 {

evenSum += i

} else {

oddSum += i

}

}

fmt.Println("Sum of even numbers between 1 and 100:", evenSum)

fmt.Println("Sum of odd numbers between 1 and 100:", oddSum)

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to toggle two LED’s. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [20 Marks] [10 Marks]

Slip 14

Q1. A) Write a program in GO language to demonstrate working of slices (like append, remove, copy etc.)

Ans- package main

import (

"fmt"

)

func main() {

// Creating a slice

slice := []int{1, 2, 3, 4, 5}

fmt.Println("Original slice:", slice)

// Appending elements

slice = append(slice, 6, 7)

fmt.Println("After appending 6, 7:", slice)

// Removing element at index 2 (which is 3)

indexToRemove := 2

slice = append(slice[:indexToRemove], slice[indexToRemove+1:]...)

fmt.Println("After removing element at index 2:", slice)

// Copying slice into another slice

copiedSlice := make([]int, len(slice))

copy(copiedSlice, slice)

fmt.Println("Copied slice:", copiedSlice)

// Slicing operations

subSlice := slice[1:4]

fmt.Println("Sub-slice slice[1:4]:", subSlice)

// Modifying original slice to show it doesn’t affect copied slice

slice[0] = 100

fmt.Println("Modified original slice:", slice)

fmt.Println("Copied slice after modification:", copiedSlice)

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to turn ON/OFF buzzer. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [10 Marks] Q3. Viva [5 Marks] Q4. Internal Assessment [15 Marks]

Slip 15

Q1. A) Write a program in GO language to demonstrate function return multiple values.

ANS-package main

import "fmt"

func calc(a, b int) (sum, diff int) {

        sum = a + b

        diff = a - b

        return

}

func main() {

        num1 := 10

        num2 := 5

        resultSum, resultDiff := calc(num1, num2)

        fmt.Println("Sum:", resultSum)

        fmt.Println("Difference:", resultDiff)

}

[20 Marks] OR B) Write a program in GO language to read XML file into structure and display structure Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to toggle two LED’s. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [10 Marks] Q3. Viva [5 Marks] Q4. Internal Assessment [15 Marks]

Slip 16

B) Write a program in GO language that prints out the numbers from 0 to 10, waiting between 0 and 250 ms after each one using the delay function.

ANS- package main

import (

"fmt"

"math/rand"

"time"

)

func main() {

// Seed the random number generator

rand.Seed(time.Now().UnixNano())

fmt.Println("Printing numbers from 0 to 10 with random delays:")

for i := 0; i <= 10; i++ {

fmt.Println(i)

// Random delay between 0 and 250 milliseconds

delay := time.Duration(rand.Intn(251)) \* time.Millisecond

time.Sleep(delay)

}

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to blink LED. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [20 Marks] [10 Marks] Q3. Viva [5 Marks] Q4. Internal Assessment [15 Marks]

Slip 17

Q1. A) Write a program in GO language to illustrate the concept of returning multiple values from a function.

ANS-package main

import "fmt"

func calc(a, b int) (sum, diff int) {

        sum = a + b

        diff = a - b

        return

}

func main() {

        num1 := 10

        num2 := 5

        resultSum, resultDiff := calc(num1, num2)

        fmt.Println("Sum:", resultSum)

        fmt.Println("Difference:", resultDiff)

}

( Add, Subtract, Multiply, Divide)

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to toggle two LED’s. c. Write down the observations on Input and Output d. Write down the Result and Conclusion [20 Marks] [10 Marks]

Slip 18

Q1. A) Write a program in GO language to print a multiplication table of number using function. [20 Marks]

ANS- package main

import "fmt"

// Function to print the multiplication table

func printTable(number int) {

fmt.Printf("Multiplication Table of %d:\n", number)

for i := 1; i <= 10; i++ {

result := number \* i

fmt.Printf("%d x %d = %d\n", number, i, result)

}

}

func main() {

var num int

// Ask the user for a number

fmt.Print("Enter a number to print its multiplication table: ")

fmt.Scan(&num)

// Call the function

printTable(num)

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to turn ON/OFF buzzer. c. Write down the observations on Input and Output d. Write down the Result and Conclusion

Slip 19

Q1. A) Write a program in GO language to illustrate the function returning multiple values(add, subtract).

ANS-package main

import "fmt"

func calc(a, b int) (sum, diff int) {

        sum = a + b

        diff = a - b

        return

}

func main() {

        num1 := 10

        num2 := 5

        resultSum, resultDiff := calc(num1, num2)

        fmt.Println("Sum:", resultSum)

        fmt.Println("Difference:", resultDiff)

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to turn ON/OFF buzzer. c. Write down the observations on Input and Output. d. Write down the Result and Conclusion.

Slip 20

Q1.

B) Write a program in Go language how to create a channel and illustrate how to close a channel using for range loop and close function.

ANS- package main

import "fmt"

func main() {

// Step 1: Create a channel

ch := make(chan int)

// Step 2: Start a goroutine to send data to the channel

go func() {

// Send 5 numbers into the channel

for i := 1; i <= 5; i++ {

ch <- i

fmt.Println("Sent:", i)

}

// Step 3: Close the channel after sending all data

close(ch)

fmt.Println("Channel closed.")

}()

// Step 4: Use for-range loop to receive data from channel until it is closed

fmt.Println("Receiving data from channel:")

for val := range ch {

fmt.Println("Received:", val)

}

fmt.Println("Finished receiving data. Program ended.")

}

Q2. a. Draw block diagram /pin diagram of Raspberry-Pi/ Beagle board /Arduino Uno board interfacing with IR Sensor/Temperature Sensor/Camera. (Internal Examiner assign any one option for board and interface device and respective interface programming option) b. WAP in python/C++ language to toggle two LED’s. c. Write down the observations on Input and Output. d. Write down the Result and Conclusion.