CONTROL STRUCTURE

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Q1. Write a program to calculate average of all numbers between n1 and n2(eg.100 to 300 Read values of n1 and n2 from user)

object Demo1

{

def main(args:Array[String])

{

print("Enter the First Number = ")

var n1 = scala.io.StdIn.readInt();

print("Enter the Second Number = ")

var n2 = scala.io.StdIn.readInt();

var sum = (n1+n2)/2;

println("Average is = "+sum);

}

}

Q2. Write a program to calculate factorial of a number.

object Demo2

{

def main(args:Array[String])

{

print("Enter the Number to Calculate Factorial = ")

var n = scala.io.StdIn.readInt()

var sum :Int = 1;

for(i<-1 to n)

{

sum = sum \* i

}

println("Factorial of "+n+" is "+sum)

}

}

Q3. Write a program to read five random numbers and check that random numbers are perfect number or not.

object Demo3

{

def main(args:Array[String])

{

print("How many Number Do u want = ")

var n = scala.io.StdIn.readInt()

for(a<-1 to n)

{

print("Enter the "+a+" Number = ")

var num = scala.io.StdIn.readInt()

var sum : Int = 0;

var i :Int = 1;

while(i<=num/2)

{

if(num%i == 0)

{

sum = sum + i;

}

i = i+1;

}

if(sum == num)

{

println("Given Number "+num+" is Perfect Number")

}

else

{

println("Given Number "+num+" is not Perfect Number")

}

}

}

}

Q4. Write a program to find second maximum number of four given numbers.

object Demo4

{

def main(args:Array[String])

{

var arr = new Array[Int](4)

for(i<-0 to (arr.length-1))

{

print("Enter Number = ")

arr(i) = scala.io.StdIn.readInt()

}

var temp :Int = 0

for(x<-0 to (arr.length-1))

{

for(y<-x+1 to (arr.length-1))

{

if(arr(x) < arr(y))

{

temp = arr(y)

arr(y) = arr(x)

arr(x) = temp

}

}

}

println("Second Highest Number is = "+arr(1))

}

}

Q5. Write a program to calculate sum of prime numbers between 1 to 100

object Demo5

{

def main(args:Array[String])

{

var primesum :Int = 0

for(a<-2 to 100)

{

var sum :Int=0;

for(i<-2 to a)

{

if(a%i == 0)

{

sum = sum + i

}

}

if(sum == a)

{

primesum = primesum + a

}

}

println("Sum of Prime Between 1 to 100 is = "+primesum);

}

}

Q6. Write a program to read an integer from user and convert it to binary and octal using user defined functions.

object Demo6

{

def octal(num:Int) :Unit =

{

printf("Octal value : %o\n", num)

}

def main(args:Array[String])

{

print("Enter the Number = ")

var num = scala.io.StdIn.readInt()

var binary = (num).toBinaryString

println("Binary of "+num+" is "+binary)

octal(num);

}

}

ARRAY

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Q1. Write a program to find maximum and minimum of an array

object Demo1

{

def main(args:Array[String])

{

print("How Many Elements do u want in Array = ")

var n = scala.io.StdIn.readInt()

var arr = new Array[Int](n)

for(b<-0 to (arr.length-1))

{

print("Enter Number = ")

arr(b) = scala.io.StdIn.readInt()

}

var max:Int = arr(0)

var min:Int = arr(0)

for(i<-0 to (arr.length-1))

{

if(arr(i) > max)

{

max = arr(i)

}

if(arr(i) < min)

{

min = arr(i)

}

}

println("Maximun number is = "+max)

println("Minimum number is = "+min)

}

}

Q2. Write a program to calculate transpose of a matrix.

object Demo2

{

def main(args:Array[String])

{

print("How many Rows = ")

var rows = scala.io.StdIn.readInt()

print("How many Column = ")

var col = scala.io.StdIn.readInt()

var matrix = Array.ofDim[Int](rows,col)

var arr = Array.ofDim[Int](rows,col)

for(i<-0 to 3-1)

{

for(j<-0 to 3-1)

{

print("Enter Data for "+i+" of "+j+" = ")

matrix(i)(j) = scala.io.StdIn.readInt()

}

}

for(i<-0 to 3-1)

{

for(j<-0 to 3-1)

{

arr(i)(j) = matrix(j)(i)

}

}

for(i<-0 to 3-1)

{

for(j<-0 to 3-1)

{

print(arr(i)(j)+" ")

}

println()

}

}

}

Q6. Write a program for multiplication of two matrices(Validate number of rows and columns before multiplication and give appropriate message)

object Demo6

{

def main(args:Array[String])

{

var row = Array(1,2,3,4)

var col = Array(3,4,5,6)

for(i<-row)

{

for(j<-col)

{

print(i\*j+" ")

}

println()

}

}

}

STRING

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Q1. Write a program to count uppercase letters in a string and convert it to lowercase and display the new string.

object Demo1

{

def main(args:Array[String])

{

var str:String = "PaRTH"

var cnt:Int = 0

for(s<-0 to (str.length-1))

{

if(str.charAt(s)>='A' && str.charAt(s)<='Z')

{

cnt = cnt + 1

}

}

println("Original String is = "+str)

println("LowerCase string is = "+str.toLowerCase())

println("Count is = "+cnt)

}

}

Q3. Write a program to read two strings. Remove the occurrence of second string in first string.

object Demo3

{

def main(args:Array[String])

{

print("Enter First String = ")

var st1 = scala.io.StdIn.readLine().toCharArray()

print("Enter Second String = ")

var st2 = scala.io.StdIn.readLine().toCharArray()

for(i<-0 to (st2.length-1))

{

for(j<-0 to (st1.length-1))

{

if(st2(i) == st1(j))

{

st1(j) = '\*'

}

}

}

for(i<-0 to (st1.length-1))

{

println(st1(i))

}

}

}

Q4. Create array of strings and read a string from user. Display all the elements of array containing given string.

object Demo4

{

def main(args:Array[String])

{

print("How Many String Do u want to store = ")

var n = scala.io.StdIn.readInt()

var arr = new Array[String](n)

for(a<-0 to (arr.length-1))

{

print("Enter String"+" "+(a+1)+" = ")

arr(a) = scala.io.StdIn.readLine()

}

for(i<-arr)

{

println(i)

}

}

}

CLASS AND OBJECT

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Q2. Define a class Employee (id, name, salary). Define methods accept() and display(). Display details of employee having maximum salary.

class Student(id:Int, name:String)

{

var marks:Int = 0 //default value

def showDetails()

{

println(id+" "+name+" "+marks)

}

def this(id:Int, name:String,marks:Int)

{

this(id,name) // Calling primary constructor (see parameters in class decalration)

this.marks = marks

}

}

object MainObject

{

def main(args:Array[String])

{

var student:Array[Student]=new Array[Student](4)

student(0)=new Student(101,"Rama",20)

student(1)=new Student(10,"Ram",60)

student(2)=new Student(103,"Ramay",80)

student(3)=new Student(104,"Ram",100)

var max:Student=new Student(0,"",0) // a temporary object

max = student(0) //assigning first record/object to max

var maxmarks=student(0).marks // a temporary maxmarks variable to contain max value

for( i <-0 to 3)

{

if(student(i).marks>maxmarks)

{

maxmarks=student(i).marks

max=student(i)

}

}

println("student details with maximum marks is")

println(max.showDetails())

}

}

Q4. Create abstract class Shape with abstract functions volume() and display(). Extend two classes Cube and Cylinder from it. Calculate volume of each and display

abstract class shape(r:Int,h:Int)

{

var vol1:Double=0

var pi:Double=3.14

def volume()

def display()

}

class cylinder(r:Int,h:Int)extends shape(r,h)

{

def volume()

{

var vol:Double=0

vol=pi\*r\*r\*h

vol1=vol

println("\*\*\*\*\*")

println("volume is:"+vol)

}

def display()

{ println("\*\*\*")

println("radius of cylinder:"+r)

println("height of cylinder:"+h)

println("volume of cylinder:"+vol1)

}

}

object Demo4

{

def main(args:Array[String])

{

var radius:Int=0

var height:Int=0

println("enter radius of cylinder:")

radius=scala.io.StdIn.readInt()

println("enter hight of cylinder")

height=scala.io.StdIn.readInt()

var n=new cylinder(radius,height)

n.volume()

n.display()

}

}

Q5. Create class Project (id, name, location). Define parameterized constructor. Keep a count of each object created and display the details of each project.

class Project(id:Int,name:String,location:String)

{

var i:Int = 0;

def display()

{

println(id+" "+name+" "+" "+location)

}

}

object Demo5 {

def main(args: Array[String])

{

print("How Many Object = ")

var n = scala.io.readInt

var arr = Array[Project]=new Array[Project](n)

for(i<-1 to n)

{

print("Enter id = ")

var id = scala.io.readInt

print("Enter name = ")

var name = scala. io. StdIn. readLine()

print("Enter Location = ")

var location = scala. io. StdIn. readLine()

arr(i) = new Project(id,name,location)

}

print("Number Of Object Created = "+n);

}

}