Scala Programming Assignment

20-PBD-002

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Scala Programs

Scala Basic Programs

1. **Write a Scala program to print "Hello, world" and version of the Scala language.**

```
object Hello extends App {
   println("Hello, world")
   println("Scala language: "+util.Properties.versionString)
     }
```

2. **Write a Scala program to compute the sum of the two given integer values. If the two values are the same, then return triples their sum.**

```
object scala_basic {
 def test(x:Int, y:Int) : Int =
   {
      if (x == y) (x + y) * 3 else x + y
   }

  def main(args: Array[String]): Unit = {
    println("Result: " + test(1, 2));
    println("Result: " + test(2, 2));
  }
}
```

3. **Write a Scala program to get the absolute difference between n and 51. If n is greater than 51 return triple the absolute difference.**

```
object scala_basic {
 def test(x:Int) : Int =
   {
   val abs_Diff = Math.abs(x - 51)
   if (x > 51) 3 * abs_Diff else abs_Diff
   }

  def main(args: Array[String]): Unit = {
    println("Result: " + test(60));
    println("Result: " + test(40));
  }
}
```

4. **Write a Scala program to check two given integers, and return true if one of them is 30 or if their sum is 30.**

```
object scala_basic {
 def test(x:Int, y:Int) : Boolean  =
  {
   x == 30 || y == 30 || x + y == 30
  }

  def main(args: Array[String]): Unit = {
    println("Result: " + test(30, 0));
    println("Result: " + test(25, 5));
    println("Result: " + test(30, 20));
    println("Result: " + test(25, 20));
  }
}
```

5. **Write a Scala program to check a given integer and return true if it is within 20 of 100 or 300.**

```
object scala_basic {
 def test(x:Int) : Boolean  =
  {
   Math.abs(100 - x) <= 20 || Math.abs(300 - x) <= 20
  }

  def main(args: Array[String]): Unit = {
    println("Result: " + test(115));
    println("Result: " + test(200));
    println("Result: " + test(250));
    println("Result: " + test(70));
  }
}
```

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Scala String Exercises

1. **Write a Scala program to get the character at the given index within a given String. Also print the length of the string.**

Sample Output:

Original String = Scala Exercises!

The character at position 0 is S

The character at position 10 is c

The character at position 15 is !

Length of the string: 16

```
object Scala_String {

 def main(args: Array[String]): Unit = {
  var str = "Scala Exercises!";
  println("Original String = " + str);
  // Get the character at positions 0 and 10.
  var index1 = str.charAt(0);
  var index2 = str.charAt(10);
  var index3 = str.charAt(15);

  // Print out the results
  println(s"The character at position 0 is ${index1}");
  println(s"The character at position 10 is ${index2}");
  println(s"The character at position 15 is ${index3}");
  println(s"Length of the string: ${str.length}")
 }
}
```

2. **Write a Scala program to concatenate a given string to the end of another string. Sample Output:**

Original strings:

String 1: Scala Exercises and

String 2: Python Exercises

The concatenated string: Scala Exercises and Python Exercises

```
object Scala_String {

 def main(args: Array[String]): Unit = {
```

```
  val str1 = "Scala Exercises and ";
  val str2 = "Python Exercises";
  println("Original strings:")
  println("String 1: " + str1);
  println("String 2: " + str2);

  // Concatenate the two strings together.
  val str3 = str1.concat(str2);
  // Display the new String.
  println("The concatenated string: " + str3);
 }
}
```

3. **Write a Scala program to check whether two String objects contain the same data.**
   Sample Output:

"Stephen Edwin King" equals "Stephen Edwin King"? false

"Stephen Edwin King" equals "Stephen Edwin King"? true

```
object Scala_String {
 def test(str1: String, str2: String): Boolean = {
  str1.equals(str2)
 }
 def main(args: Array[String]): Unit = {
     val columnist1 = "Stephen Edwin King";
     val columnist2 = "Stephen Edwin  King";
     val columnist3 = "Stephen Edwin King";

     // Are any of the above Strings equal to one another?
     val equals1 = test(columnist1,columnist2)
     val equals2 = test(columnist1,columnist3)
     // Display the results of the equality checks.
     System.out.println("\"" + columnist1 + "\" equals \"" +
        columnist2 + "\"? " + equals1);
     System.out.println("\"" + columnist1 + "\" equals \"" +
        columnist3 + "\"? " + equals2);
    }
}
```

4. Write a Scala program to compare a given string to another string, ignoring case considerations.
Sample Output:

"Stephen Edwin King" equals "Stephen Edwin King"? false

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"Stephen Edwin King" equals "Stephen edwin king"? true

```
object Scala_String {

 def test(str1: String, str2: String): Boolean = {
  str1.equalsIgnoreCase(str2)
 }

 def main(args: Array[String]): Unit = {
     val columnist1 = "Stephen Edwin King";
     val columnist2 = "Stephen Edwin  King";
     val columnist3 = "Stephen edwin king";

     // Are any of the above Strings equal to one another?
     val equals1 = test(columnist1,columnist2)
     val equals2 = test(columnist1,columnist3)

     // Display the results of the equality checks.
     System.out.println("\"" + columnist1 + "\" equals \"" +
        columnist2 + "\"? " + equals1);
     System.out.println("\"" + columnist1 + "\" equals \"" +
        columnist3 + "\"? " + equals2);
   }
}
```

5. Write a Scala program to replace a specified character with another character.
Sample Output:

Original string: The quick brown fox jumps over the lazy dog.

New String: The quick brown fox jumps over the lazy fog.

```
object Scala_String {
 def main(args: Array[String]): Unit = {
  val str = "The quick brown fox jumps over the lazy dog.";

  // Replace all the 'd' characters with 'f' characters.
  val new_str = str.replace('d', 'f');
  // Display the strings for comparison.
  println("Original string: " + str);
  println("New String: " + new_str);
 }
}
```

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Scala List Exercises

1. **Write a Scala program to get the difference between two given lists.**

```
object Scala_List
{
def main(args: Array[String]): Unit =
 {
  val list1 = List("Red","Blue","Blue","Green","Black")
  val list2 = List("Blue","White")
  println("Original lists")
  println(list1)
  println(list2)
  println("Difference of the said two lists(list1-list2):")
  val temp = list2.toSet
  val result = list1.filterNot(temp)
  println(result)
  println("Difference of the said two lists(list2-list1):")
  val temp1 = list1.toSet
  val result1 = list2.filterNot(temp1)
  println(result1)
 }
}
```

2. **Write a Scala program to find the first and last element of given list.**

```
object Scala_List
{
 def main(args: Array[String]): Unit =
 {
  val colors = List("Red", "Blue", " Black ", "Green", " White", "Pink")
  println("Original list:")
  println(colors)
  println("First element of the said list: " + colors.head)
  println("Last element of the said list: " + colors.last)
 }
}
```

3. **Write a Scala program to merge (concatenate) given lists.**

```
object Scala_List
{
 def main(args: Array[String]): Unit =
{
  val colors = List("Red","Blue","Black","Green","White")
  println("Original lists:")
  println(colors)
```

```
  println("Index of 'Red':", colors.indexOf("Red"))
  println("Index of 'Blue':", colors.indexOf("Blue"))
  println("Index of 'Black':", colors.indexOf("Black"))
  println("Index of 'Green':", colors.indexOf("Green"))
  println("Index of 'White':", colors.indexOf("White"))
 }
}
```

4. **Write a Scala program to find the even and odd numbers from a given list.**

```
object Scala_List
{
 def main(args: Array[String]): Unit =
 {
  val nums1 = List(1,3,5,7,9)
  val nums2 = List(2,4,6,8,10)
  println("Original Lists:")
  println(nums1)
  println(nums2)
  println("Merge the said two lists using the ++ method:")
  val nums_1 = nums1 ++ nums2
  println(nums_1)
  println("Using ::: way:")
  val nums_2 = nums1 ::: nums2
  println(nums_2)
  println("Using concat method:")
  val nums_3 = List.concat(nums1, nums2)
  println(nums_3)
 }
}
```

5. **Write a Scala program to find the nth element of a given list.**

```
object Scala_List
{
 def main(args: Array[String]): Unit =
 {
  val nums = List(1, 2, 3, 4, 5, 7, 9, 11, 14, 12, 16)
  println("Original list:")
  println(nums)
  val even_nums = nums.filter(_ % 2 ==0)
  println("Even number of the said list:")
  println(even_nums)
  val odd_nums = nums.filter(_ % 2 != 0)
  println("Odd number of the said list:")
  println(odd_nums)    } }
```

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Scala Array Exercises

1. **Write a Scala program to find the common elements between two arrays of strings.**

```
object Scala_Array {
  def main(args: Array[String]): Unit = {
    var nums1 = Array(2,4,5,7,9)
    var nums2 = Array(2,3,5,6,9)
    //Call the following Java class for some array operation
    import java.util.Arrays;
    println("Original Array1 : "+Arrays.toString(nums1));
    println("Original Array2 : "+Arrays.toString(nums2));
    println("Common elements of the said two arrays:")
    var i = 0
    var j =0;
      for (i <- 0 to nums1.length-1)
      {
        j=0
        for (j <- 0 to nums2.length-1)
          {
             if(nums1(i) == nums2(j))
             {
               print(s"${nums1(i)}, ")
              }
          }
       }
  }
}
```

2. **Write a Scala program to remove duplicate elements from an array of strings.**

```
object Scala_Array {
  def main(args: Array[String]): Unit = {
     var my_array = Array("bcd", "abd", "jude", "bcd", "oiu", "gzw", "oiu");
     println("Orginal array:")
     for ( x <- my_array) {
       print(s"${x}, ")
      }

      var f =0
      for (i <- 0 to my_array.length-1)
       {
         var x = f+1;
         for (j <- x to my_array.length-1)
          {
             if(my_array(f) == my_array(x) && (f != x) )
```

```
            {
               println("\nDuplicate Element: "+my_array(x));
            }
           x=x+1;
          }
         f=f+1;
      }
     }
}
```

3. **Write a Scala program to find the number of even and odd integers in a given array of integers.**

```
object scala_basic {

 def main(args: Array[String]): Unit = {
  var array_nums = Array(5, 7, 2, 4, 9)
  println("Original array:")
  for (x <- array_nums) {
   print(s"${x}, ")
  }

  var ctr = 0;
  for (i <- 0 to array_nums.length - 1) {
   if (array_nums(i) % 2 == 0)
     ctr=ctr+1
  }
   println("\nNumber of even numbers : " + ctr);
   println("Number of odd numbers  : " + (array_nums.length - ctr));
 }
}
```

4. **Write a Scala program to compute the average value of an array element except the largest and smallest values.**

```
object scala_basic {
 def main(args: Array[String]): Unit = {
 var array_nums = Array(5, 7, 2, 4, 9);
 println("Original array:")
  for (x <- array_nums) {
    print(s"${x}, ")
  }
         var max = array_nums(0)
         var min = array_nums(0)
         var sum: Double = 0
         for (i <- 0 to array_nums.length - 1)
         {
```

```
                sum = sum + array_nums(i);
                if(array_nums(i) > max)
                        max = array_nums(i);
                else if(array_nums(i) < min)
                        min = array_nums(i);
        }
        val x: Double = ((sum-max-min) / (array_nums.length - 2));
        println(s"\nAverage value the said array elements except the largest and smallest
values: ${x}");
        }
}
```

5. **Write a Scala program to remove the duplicate elements of a given sorted array and return the new length of the array.**

```
object Scala_Array {
 def test(nums: Array[Int]) : Int = {
  var index = 1;
    for (i <- 0 to nums.length-1) {
       if (nums(i) != nums(index))
      {
         index += 1
         nums(index) = nums(i)
        }
    }
         index;
 }

 def main(args: Array[String]): Unit = {
  val nums = Array(20, 20, 30, 40, 50, 50, 50, 50, 60, 60);
         println(s"Original array length: ${nums.length}");
                println("Array elements are: ");
   for (i <- 0 to nums.length - 1)
    {
       print(s"${nums(i)} ");
    }
                println(s"\nThe new length of the array after removing the duplicate elements is:
${test(nums)}");
   }
     }
```