* Homework #1

**# Due date: 25th/Sep, 23:59:59**

**# Put your answer in “Your Code)” section in each question**

**# For each solution you wrote, you MUST give comments for important lines. Without comments, your solutions will be considered copy&paste codes.**

**# You also need to provide a screenshot of your result (i.e., Logcat output).**

**# You must use Kotlin language.**

**1. Write a simple calculator program. The available arithmetic operators are +, -, \*, and / operators. Operands and operator must be separated by whitespaces. The program must print “Cannot divide by 0” string when a user tries to “divide by 0” operation. Use “when” statement for operator branch.**

**Code base)**

val expression = "100 / 0" // modify this line for test  
  
// implement here

Log.d("HW01", "result: $result, (expression: $expression)")

**Output example)**

텍스트이(가) 표시된 사진

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**Your Code)**

*// spliting expression by whitespaces* **val** splited = expression.*split*(**" "**)  
  
*// operator : + - \* /  
// first, second : Each operand* **val** operator = splited[1].toString()  
 **val** first = splited[0].*toInt*()  
 **val** second = splited[2].*toInt*()  
  
*// variable result will contain the output of operation* **val** result = **when**(operator){  
 **"+"** -> first + second  
 **"-"** -> first - second  
 **"\*"** -> first \* second  
 **"/"** -> {  
 **if** (second == 0) {  
 **"Cannot devide by 0"** }**else**{  
 first / second  
 }  
 }  
  
 **else** -> {**"Check your expression and try again please."**}  
 }  
  
 Log.d(**"HW01"**, **"result: $**result**, (expression: $**expression**)"**)

**Your Output)**

**Text, letter

Description automatically generated2. Write a program that 1) takes a positive integer number N (less than 100), 2) creates an integer array with the size of N, 3) fills in this array using a set of random numbers ranging from 1~100, 4) prints out the numbers in this array. Note that this array MUST NOT have the duplicate numbers.**

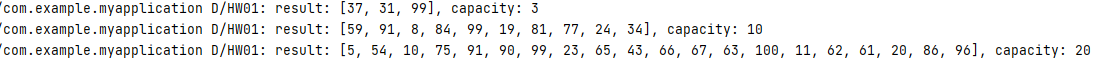
**Code base)**

val capacity = 10 // modify this for test

// implement here

Log.d("HW01", "result: $myUniqueArray, capacity: $capacity")

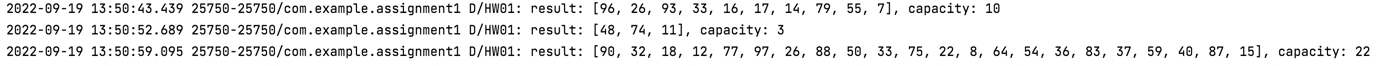
**Output example)**



**Your Code)**

*// 2) Creating an integer array with the size of capacity* **var** temp = IntArray(capacity)  
  
*// 3) Filling in the array using a set of random numbers ranging 1~100* **var** i:Int = 0  
 **while**(i<capacity){  
 **var** random = Random().nextInt(100)+1  
*// Checking duplications. If there is no duplication, fill the array* **if**(!temp.*contains*(random)){  
 temp.set(i, random)  
 i++  
 }  
*// If there is duplication, just repeat the while statement again* **else**{  
 **continue** }  
 }  
  
*// Converting array into String* **var** myUniqueArray = Arrays.toString(temp)  
  
*// 4) Printing out the numbers in the array* Log.d(**"HW01"**, **"result: $**myUniqueArray**, capacity: $**capacity**"**)

**Your Output)**

****

**3. Write a program that initializes an array consisting of some string lines and counts the words in each string line.**

**Code base)**

val strLine = *… // initialize string array with string lines*

*/\* Following is an example set of string lines*

"Seoul National University of Science and Technology",  
"Seoul Station",  
"IT Management",  
"Android and Kotlin is not that difficult",  
"Exit"

*\*/*

// implement here

**Output example)**

텍스트이(가) 표시된 사진

자동 생성된 설명

**Your Code)**

*// Initializing an array* **val** strLine = *arrayOf*(  
 **"Information Technology Management"**,  
 **"Seoultech is wonderful"**,  
 **"My name is Jeewon Kim"**,  
 **"Good morning Good afternoon Good evening Good night"**,  
 **"Bye"** )  
*// Spliting words and counting* **for**(i **in** strLine){  
 **var** count = i.*split*(**" "**).**size** Log.d(**"HW01"**,**"The number of words is $**count**"**)  
 }

**Your Output)**

**Text

Description automatically generated with medium confidence**

**4. Write a program that takes a string, rotates it one character at a time, and prints it all.**

**Code base)**

var str = "I Love Kotlin" // modify this for test  
Log.d("HW01",str)  
  
// implement here

**Output)**

텍스트, 신문이(가) 표시된 사진

자동 생성된 설명

**Your Code)**

*// Initializing a string* **var** str = **"My name is Jeewon"  
  
 for**(i **in** 0..str.**length**){  
 Log.d(**"HW01"**,str)  
*// Temporarily storing first string* **var** temp = str[0]  
*// Removing first string and moving it to the end of the string* str = str.*removeRange*(0,1) + **"$**temp**"** }

**Your Output)**

A close-up of a document

Description automatically generated with medium confidence

**5. Implement Grade class to make the following program work. The usage of Grade class is as follows:**

**Code base)**

val math = 100 // modify these scores for test  
val science = 90 // modify these scores for test  
val english = 80 // modify these scores for test  
  
val me = Grade(math, science, english)

Log.d("HW01","my math: $math, my science: $science, my english: $english")  
Log.d("HW01","Average is ${me.average()}")

// implement Grade class

**Output)**

텍스트이(가) 표시된 사진

자동 생성된 설명

**Your Code)**

*// Implementing Grade class* **class** Grade(**var score1**:Int, **var score2**:Int, **var score3**:Int){  
*// Making a average function* **fun** average():Int{  
 **var** result:Int = (**this**.**score1**+**this**.**score2**+**this**.**score3**)/3  
 **return** result  
 }  
 }

**Your Output)**

**A picture containing text

Description automatically generated6. Write a code to check if a given string is palindrome or not.**

**Code base)**

val str = "jinwoo" // modify this for test

// implement here

**Output example)**

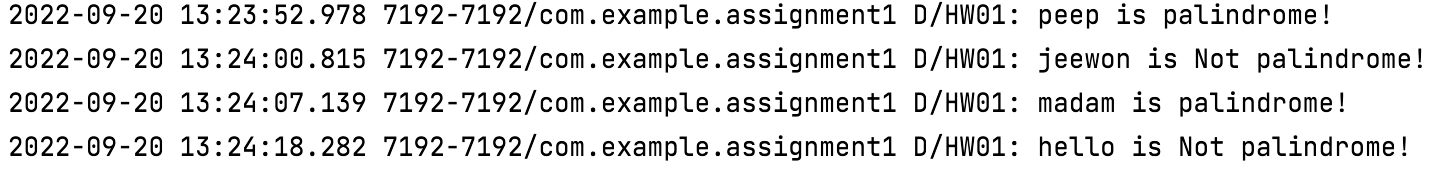
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**Your Code)**

*// First half of string* **var** front:String = str.*removeRange*(str.**length**/2,str.**length**)  
*// Second half of string when the number of string is odd* **var** oddBack:String = str.*removeRange*(0,str.**length**/2+1)  
*// Second half of string when the number of string is even* **var** evenBack:String = str.*removeRange*(0,str.**length**/2)  
  
*// The num of str : Odd number* **if**(front.*reversed*()==oddBack && str.**length**%2!=0){  
 Log.d(**"HW01"**, **"$**str **is palindrome!"**)  
 }  
*// The num of str: Even number* **else if**(front.*reversed*()==evenBack && str.**length**%2==0){  
 Log.d(**"HW01"**, **"$**str **is palindrome!"**)  
 }  
*// If it's not a palindrome* **else**{  
 Log.d(**"HW01"**, **"$**str **is Not palindrome!"**)  
 }

**Your Output)**

**7. The following is the definition of Point class.**

open class Point(open var x: Int, open var y: Int) {  
 fun move(x: Int, y: Int) {  
 this.x = x  
 this.y = y  
 }  
  
 open fun show(){  
 Log.d("HW01","Current Point: ($x, $y)")  
 }  
}

**Write ColorPoint class that extends Point class.**

**ColorPoint should**

1. **Take color:String argument**
2. **Have setPoint() to set new x, y values**
3. **Be able to set new color information**
4. **Monitor the change of y value and print it**
5. **Override show() method to print color information as well**

**Test code for Point and ColorPoint classes is as follows:**

val p = Point(5,5)  
p.x=10  
p.y=20  
p.show()  
  
val cp = ColorPoint(5, 5, "YELLOW")  
cp.setPoint(10, 20)  
cp.color = "GREEN"  
cp.y=100  
cp.show()

**Output example)**

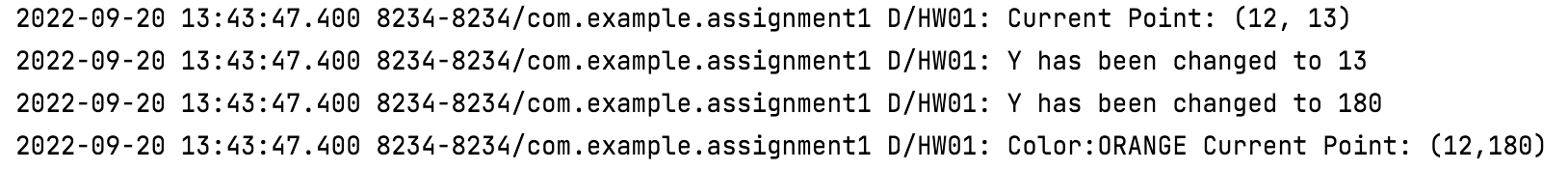
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자동 생성된 설명

**Your Code)**

*// Initializing ColorPoint class that extends Point class* **class** ColorPoint(**override var x**: Int, y:Int, **var color**:String):Point(x,y){  
*// Overriding variable y, setting a new value and printing a message of monitoring for variable y* **override var y**: Int = y  
 **set**(v) {  
 **field** = v  
 Log.d(**"HW01"**,**"Y has been changed to ${**v**}"**)  
 }  
*// Setting new x,y values* **fun** setPoint(x:Int,y:Int){  
 **this**.**x** = x  
 **this**.**y** = y  
 }  
*// Setting new color information(new function setPoint)* @JvmName(**"setColor1"**)  
 **fun** setColor(color:String) {  
 **this**.**color** = color  
 }  
  
*// overriding show() method to print color information* **override fun** show(){  
 Log.d(**"HW01"**,**"Color:$color Current Point: ($x,$y)"**)  
 }  
  
 }

**Your Output)**

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