Northern Michigan University (Marquette Co, MI)

CS345-01-23W Android Programming (Andrew A. Poe) Name: _____
Endterm (Exam 2) Page 1/2 Friday 28 April 2023 1:00 P.M. EDT

Time: 50 minutes.

1. I have the following method in Kotlin:

```
fun Rectangle (Board:Array<String>):Boolean { ... }
```

This method accepts an array of string representing a rectangular grid of characters. (All strings in the array are the same length as each other; you may assume this to be true.) There are exactly 4 X's in this array; you may assume this to be true. All other characters are spaces. This method returns true if the 4 X's are the corners of a rectangle with sides parallel to the sides of the array (no weird rectangles at an angle or anything). It returns false if the 4 X's are NOT on the corners of a rectangle.

```
  X   X


  X   X would return true.

  X  X
   XX  would return false.
```

Write the code for this method. Be careful not to go out of bounds.

```
fun Rectangle (Board:Array<String>):Boolean {

 var i1=0
 var j1=0
 var i2=0
 var j2=0
 var i3=0
 var j3=0
 var i4=0
 var j4=0
 var ct=0
 for (i in Board.indices)
  for (j in Board[i].indices)
   if (Board[i][j]=='X') {
    ct++
    if (ct==1) {i1=i;j1=j}
    if (ct==2) {i2=i;j2=j}     //Saving coordinates of each X
    if (ct==3) {i3=i;j3=j}
    if (ct==4) {i4=i;j4=j}
   }
 return i1==i2 && i3==i4 && j1==j3 && j2==j4  //Are they on a rectangle?
}
```

2. I have a table called "Baseball", in an SQLite database, containing the fields PlayerFirstName (text), PlayerLastName (text) and TeamName (text). Write Kotlin code that prints out every player on the San Diego Padres. You do not have to open or create the database. Just write the code that issues the query and moves the cursor through the table.

```
val cursor = query("TeamName=\"San Diego Padres\"",null)
cursor.moveToFirst()
while (!cursor.isAfterLast) {
  val ss = cursor.stuff
  println("${ss.playerfirstname} ${ss.playerlastname}))
  cursor.moveToNext()
}
cursor.close()
```

3. Write Kotlin code that will take an image stored at http://www.music.com/weirdal.jpg and display it into a ImageView called weirdalphoto in the layout and mWeird in the Kotlin code. You will not have to stretch or shrink the image, so don't worry about that.

```
mWeird = findViewById (R.id.weirdalphoto)
val executor = Executors.newSingleThreadExecutor()
executor.execute {
 doInBackground("http://www.music.com/weirdal.jpg")
}
while (!webthread);
onPostExecute (mIcon11!!,mWeird!!)


fun doInBackground(url: String)  {

 val infile = java.net.URL(url).openStream()
 mIcon11 = BitmapFactory.decodeStream(infile)
 webthread = true
}

fun onPostExecute (result:Bitmap,bmImage:ImageView) {

 bmImage.setImageBitmap(result)
}
```

4. Write the Kotlin code that will open the webfile ("http://philos.nmu.edu/randomwords.txt"), count the number of X's (capital X) in that file, and display the answer on a TextView named Xcount.

```
val obj = URL("http://philos.nmu.edu/randomwords.txt")
val con = obj.openConnection() as HttpURLConnection
con.requestMethod = "GET"
var website =
BufferedReader(InputStreamReader(con.inputStream))
var info = ""
var xc = 0
while (true) {
 val c = website.read()
 if (c == -1) break
```

```
 if ((char)c=='X') xc++
}
website.close()
Stories.text = "${xc}"
```