Northern Michigan University (Marquette Co, MI)

CS345-01-25W Android Programming (Andrew A. Poe) Name: _____
Endterm (Exam 2) Page 1/2 Friday 25 April 2025 4:00 P.M. EDT

Time: 50 minutes.

1. I have the following method in Kotlin:

```
fun TicTacToe (Board:Array<String>):Char? { ... }
```

This method accepts an array of string representing a 3x3 square grid of characters. Every character in the grid is an X, an O, or a space. Return 'X' if there are three X's in a row horizontally, vertically, or diagonally. Return 'O' if there are three O's in a row. Return null if neither X nor O has three in a row, or, for whatever bizarre reason, both do.

```
fun TicTacToe (Board:Array<String>):Char? {

 Boolean Xwin = false
 Boolean Owin = true
 for (i in 0..2) {
  if (Board[i][0]=='X' && Board[i][1]=='X' && Board[i][2]=='X') Xwin = true
  if (Board[i][0]=='O' && Board[i][1]=='O' && Board[i][2]=='O') Owin = true
  if (Board[0][i]=='X' && Board[1][i]=='X' && Board[2][i]=='X') Xwin = true
  if (Board[0][i]=='O' && Board[1][i]=='O' && Board[2][i]=='O') Owin = true
 }
 if (Board[0][0]=='X' && Board[1][1]=='X' && Board[2][2]=='X') Xwin = true
 if (Board[0][0]=='O' && Board[1][1]=='O' && Board[2][2]=='O') Owin = true
 if (Board[2][0]=='X' && Board[1][1]=='X' && Board[0][2]=='X') Xwin = true
 if (Board[2][0]=='O' && Board[1][1]=='O' && Board[0][2]=='O') Owin = true
 if (Xwin && !Owin) return 'X'
 if (Owin && !Xwin) return 'O'
 return null
}
```

2. I have a table called OlympicAthletes in an SQLite database containing the fields Name (text), Sport (text), and Medal (text). Write Kotlin code that prints out, in alphabetical order, every gold, silver, or bronze medalist in curling. 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.

```
var cursor = query ("SPORT = 'Curling' and (MEDAL = 'Gold' or
MEDAL = 'Silver' or MEDAL = 'Bronze')",null)
cursor.moveToFirst()
while (!cursor.isAfterLast){
 val ath = cursor.stuff
 println ("${ath.NAME}")
 cursor.moveToNext()
}
```

3. Write Kotlin code that will take an image stored at http://euclid.nmu.edu/appletontuxedo.jpg and display it into a ImageView called profpic in the layout and mProf in the Kotlin code. You will not have to stretch or shrink the image, so don't worry about that. You will have to create another thread to extract the image since the main thread cannot access the Internet.

```
mProf = findViewById (R.id.profpic)
val executor = Executors.newSingleThreadExecutor()
executor.execute {
 doInBackground("http://www.dccomics.org/batman.jpg")
}
while (!webthread);
onPostExecute (mIcon11!!,mProf!!)


fun doInBackground(url: String)  {

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

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

 atImage.setImageBitmap(result)
}
```

4. Write the Kotlin code that will open the webfile ("http://philos.nmu.edu/longstory.txt") and counts the number of times the word "the" (in lowercase) appears in the file. (You know it's the word "the" if no letter appears immediately before the "t" and after the "e".) Store the number of "the"'s in the textfield called mTV in the Kotlin code and tv1 in the layout.

```
val obj = URL("http://philos.nmu.edu/longstory.txt")
val con = obj.openConnection() as HttpURLConnection
con.requestMethod = "GET"
var website =
BufferedReader(InputStreamReader(con.inputStream))
var info = ""
while (true) {
 val c = website.read()
 if (c == -1) break
 info += (char) c;
}
website.close()
var c1 = ' '
var c2 = ' '
var c3 = ' '
var c4 = ' '
var ct = 0
for (c5 in info) {

 if (!isLetter(c1) && c2 == 't' && c3 == 'h' && c4 == 'e' && !isLetter (c5)
  ct += 1
```

```
 c1 = c2; c2 = c3; c3 = c4; c4 = c5

mTV!!.text = "${ct}"
```