Outline

- Logistics
- Bigger Number app
- Kotlin overview
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● Bigger Number app
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Week #

1. **Industry panel discussion**
2. **Assn 1: Tip Calculator**
3. **Assn 2: Google Maps**
4. **Assn 3: Yelp Clone**
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Number Guessing Game
Press the button which contains the larger number!
package edu.stanford.rkpandey.biggernumber

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}
Activity ←→ Layout Communication
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What is Kotlin?

- Programming language developed by JetBrains, **1.0 released in 2016**
  - In contrast, Java was released in 1995 by Sun Microsystems
- Statically typed, object oriented
- Incorporated lessons from the widespread use of Java
- Top priority for Kotlin is **pragmatism**
  - Inter-operates with Java by running on the JVM
Why Kotlin- “follow the community”

- Google I/O 2017: Kotlin support for Android
  - Google I/O 2019: Android will be “Kotlin-first”
- More and more companies are adopting Kotlin
- Potential growth outside the world of Android as well
- Kotlin will make you a better Java developer
Why Kotlin- “follow the tech”

- Concise
- Safe
- Interoperable
- Tool-friendly
- (Android) Kotlin extensions
Get last element of a list

```kotlin
val myList = listOf(42, 91, 51)

myList.get(myList.size - 1)

myList[myList.size - 1]

myList[myList.lastIndex]

myList.last()
```
Why Kotlin [repo]

- Type inference
- Immutability
- Null safety
Type inference

**Java**

```java
String first = "Jane";
String last = "Smith";
int age = 35;

List<String> friends = Arrays.asList("April", "John");
```

**Kotlin**

```kotlin
val first: String = "Jane"
val last = "Smith"
val age = 35

val friends = listOf("April", "John")
```
Immutability

Java
int age = 35;
    age += 1;

Kotlin
var age = 35
    age += 1

Java
List<String> friends = Arrays.asList("April", "John");

friends = Arrays.asList("May", "Mark");

friends[0] = "June"

Kotlin
val friends = mutableListOf("April", "John")

friends[0] = "May"
val vs var

val friends

Forbidden symbol
Nullability

- “I call it my billion-dollar mistake”
  - Tony Hoare
- Kotlin adds null checks at compile-time rather than run-time
Nullability in Kotlin

Java
String name = null;
int length = name.length();    // runtime crash
if (name != null) {
    int length = name.length();  // ok
}

Kotlin
val bad: String = null         // compiler error!
val name: String? = null       // ok
val lengthBad = name.length()  // compiler error!
val length1 = name?.length() ?: 0
if (name != null) {
    val length2 = name.length()
}
Practice: gist

data class ExamResult(val name: String, val score: Int)
Extension functions

Extend a class with new functionality without having to inherit from the class

```kotlin
fun <T> List<T>.secondToLast(): T? {
    if (this.size < 2) {
        return null
    }
    return this[this.size - 2]
}
```
Other nice features

- Data classes
- Single expression functions
- Automatic setters and getters
- Wrapping Java primitives into objects:
  - Byte, Short, Int, Long, Float, Double, Char, Boolean
  - Still uses primitive under the hood for performance
Prep for next week

- Code LeetCode problems with Kotlin
  - [Two Sum](#)
  - [Water container](#)

- Android Studio [shortcuts video](#)