Homework 2 Individual Part

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2.What are the differences between the ART and the DVM?

DVM is a virtual machine developed by Google for the Android platform. Strictly speaking, DVM is not a JAVA virtual machine, because it didn’t follow the JVM standard.

ART was developed by Google for Android 4.4 to replace the DVM virtual machine.

The main differences between the ART virtual machine and DVM are:

a. Application Execution Method: In DVM, every time an application runs, its bytecode needs to be compiled into machine code by the compiler, leading to a decrease in application performance. While ART, the system pre-compiles the bytecode into machine code during the application installation and stores it locally. As a result, the application doesn't need to be compiled during each execution, improved the performance and reduced battery consumption. However, this approach will add the installation time, especially complex apps. Additionally, when bytecode is converted to machine code, the required storage space increases. After Android 7.0, ART introduced the Just-In-Time (JIT) compiler, which doesn't convert all bytecode to machine code during installation but only compiles frequently used code, reducing installation time and conserving local storage.

b. Architecture Support: DVM was designed for 32-bit CPUs, while ART is compatible with both 64-bit and 32-bit CPUs. DVM is register-based, using 32-bit registers, which means it requires two consecutive registers to represent 64-bit types.

c. Garbage Collection (GC): ART has made improvements to the garbage collection mechanism. For instance, it performs garbage collection more frequently, reducing GC pauses from two times to once.

d. Runtime Heap Space Allocation: The heap space allocation during runtime is different between DVM and ART. DVM's runtime heap consists of two spaces and multiple auxiliary data structures. It mainly comprises Zygote Space and Allocation Space. The Zygote Space primarily manages objects preloaded and created during the Zygote process initiation and doesn't trigger GC, shared by both Zygote Space and the application process. Objects are allocated and freed on Allocation Space. On the other hand, the ART virtual machine introduced Image Space and Large Object Space, used for storing preloaded classes and large objects. For ART, Zygote Space and Image Space shares the memory for processes.[1]

3.What are some good routines/things to do to include in the Activity’s onCreate Event?

a. It’s a good place to connect into Views by using findViewById()

b. In onCreate(), the Activity is not visible yet, and the layout has not been sized and laid out yet. That will not happen until onResume(). To see this in action, you can attempt to invoke getWidth() on a View while inside onCreate().[2]

4.What are some of the advantages to using the Snackbar?

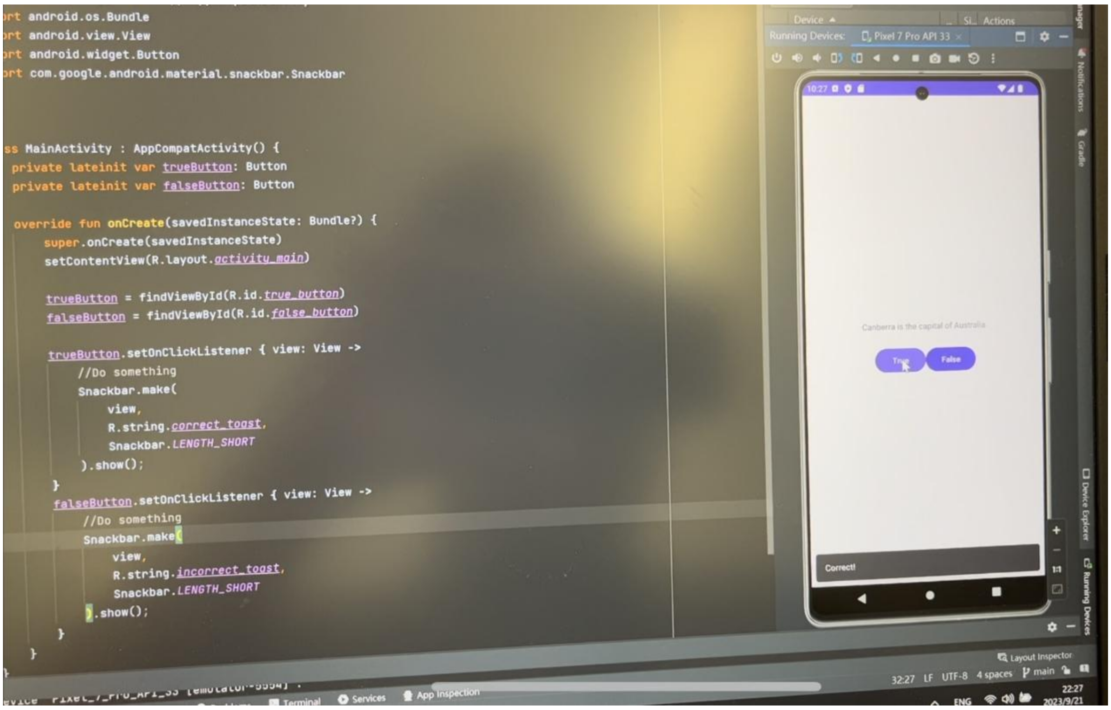
a. Prompt information by Snackbar can interact with the user for better user experience.

b. Snackbar also have dynamic display just like Toast, but slowly expands from the bottom of the screen, or the lower left corner on larger devices.

c. SnackBars appear above all other elements on the screen.

d. There is only one SnackBar at any moment. [3]

Snackbar App Demo:



```
rt android.os.Bundle
rt android.view.View
rt android.widget.Button
rt com.google.android.material.snackbar.Snackbar


ss MainActivity : AppCompatActivity() {
 private lateinit var trueButton: Button
 private lateinit var falseButton: Button

 override fun onCreate(savedInstanceState: Bundle?) {
     super.onCreate(savedInstanceState)
     setContentView(R.layout.activity_main)

     trueButton = findViewById(R.id.true_button)
     falseButton = findViewById(R.id.false_button)

     trueButton.setOnClickListener { view: View ->
         //Do something
         Snackbar.make(
             view,
             R.string.correct_toast,
             Snackbar.LENGTH_SHORT
         ).show();
     }
     falseButton.setOnClickListener { view: View ->
         //Do something
         Snackbar.make(
             view,
             R.string.incorrect_toast,
             Snackbar.LENGTH_SHORT
         ).show();
     }
 }
}
```

Canberra is the capital of Australia

Correct!

Demo Video Link:
https://drive.google.com/file/d/1o2cgx_x7K-8o6HreAqNq1wpZBoCj1c2H/view?usp=drive_link

Reference:

[1]https://blog.csdn.net/xu_coding/article/details/118422749

[2]https://www.reddit.com/r/androiddev/comments/lew98b/what_is_the_oncreate_method_in_the_android_app/

[3]
https://blog.csdn.net/u012810020/article/details/52108818?ops_request_misc=%257B%2522request%255Fid%2522%253A%2522169552150916800192293953%2522%252C%2522scm%2522%253A%252220140713.130102334..%2522%257D&request_id=169552150916800192293953&biz_id=0&utm_medium=distribute.pc_search_result.none-task-blog-2~all~sobaiduend~default-1-52108818-null-null.142^v94^insert_down1&utm_term=snackbar&spm=1018.2226.3001.4187