Iteration Report

Android IDE for Python Program

Advanced Topics in Software Engineering

CSE 6324

Github link: https://github.com/Priyanka-wakte/CSE-6324_Adv-SE---Team-8

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Project Plan:

Features:

The following are the features that will be present in the application:

- **Login and Signup page:**

This will be the landing page of the application. User will be able to login or signup and after successful registration, he is moved to the application environment.

- **Compile and Run python code:** [2]

The IDE will allow user to type +python code and check the output of the code.

- **Report the syntax errors:**

For an unsuccessful compilation, the compiler will report the errors to the user.

- **Auto-correct syntactical errors:**

The user will get a suggestion of the auto-corrected code. For Example, if there is any indentation error, the application will send a suggestion by correcting the indentation error.

- **Find and replace option to edit the code:**

The user can replace specific parts of code which he/she wants to replace.

- **Export the written code as a python file:**

After typing the code, the user can export the written code as a python file.

- **Logout**

The user will able to logout from the application.

Iteration Plan:

Iteration1(Current)	Iteration2	Iteration3
Implementation Part: Earlier we had lot of bugs in the application and the compiler was also not working. So, we did research a found an API which takes python code as an input and generated output for it. Now we made the application stable one, which compiles and generates output and reports syntactical errors in the code. **Risks we may face for the next Iterations**: We are working on identifying ways to auto correct the syntactical errors in the python code. We can find the feasible solution for the autocorrection also taking suggestions of mentor on how to implement that in the coming iterations.	**Implementation Part:** After successful completion of iteration 1, we have plan to make changes to UI and make it more user friendly. Also implement Log in and Sign-Up functionality for the app and then we will add find and replace option to edit the code and export feature to download it as a python file. **Risks we may face for the next Iterations**: N/A	**Implementation Part:** After successful completion of Iteration2, we have plan to implement auto correct feature which is one of the most important features in the application.

Comparison with Related Apps:

Feature	QPYTHON	PYDROID	AIPP
Open source	Open source	Not open source	Open source
Slow in Execution	slow	Fast compared to Qpython	Similar to pydroid
Finding symbols And typing in app	Cannot find symbols	Can find symbols	Can find symbols
copy paste option	No copy paste option	No copy paste option	We can copy paste
Ads issues	No ad issues	There are ad issues	No ad issues
Auto correct	No autocorrect option	Auto correct can be done	Auto correct can be done
Find and replace option	No find and replace option	No find and replace option	Find and replace option available
Export option	No export option	No export option	Export option available

Risks:

Risks	Major/Minor	Feasible solution	Current status
Auto correct	Major	We are working on the best solution we can find	In progress
UI issues	Major	We faced problem in initial stage, but we integrated with other APIs and were successful	In progress
Understanding previous code	Medium	We were able to understand most of the code and, we could fix the bugs that were encountered	Done
Perform unit testing	Medium	Yet to perform unit testing on the application (3rd iteration)	Yet to do
Time estimation to complete the application	Minor	As of now we are on track with our 1st iteration	In progress

Specification and Design :

The code is compiled using an open source API using okhttp request[4]. The login and signup pages aren't implemented yet, so screenshots are not provided for the sample inputs. Login and signup pages will contain text boxes which will take input as mail Id and password.

The following screenshots provide the details of input and outputs that our compilers produce.

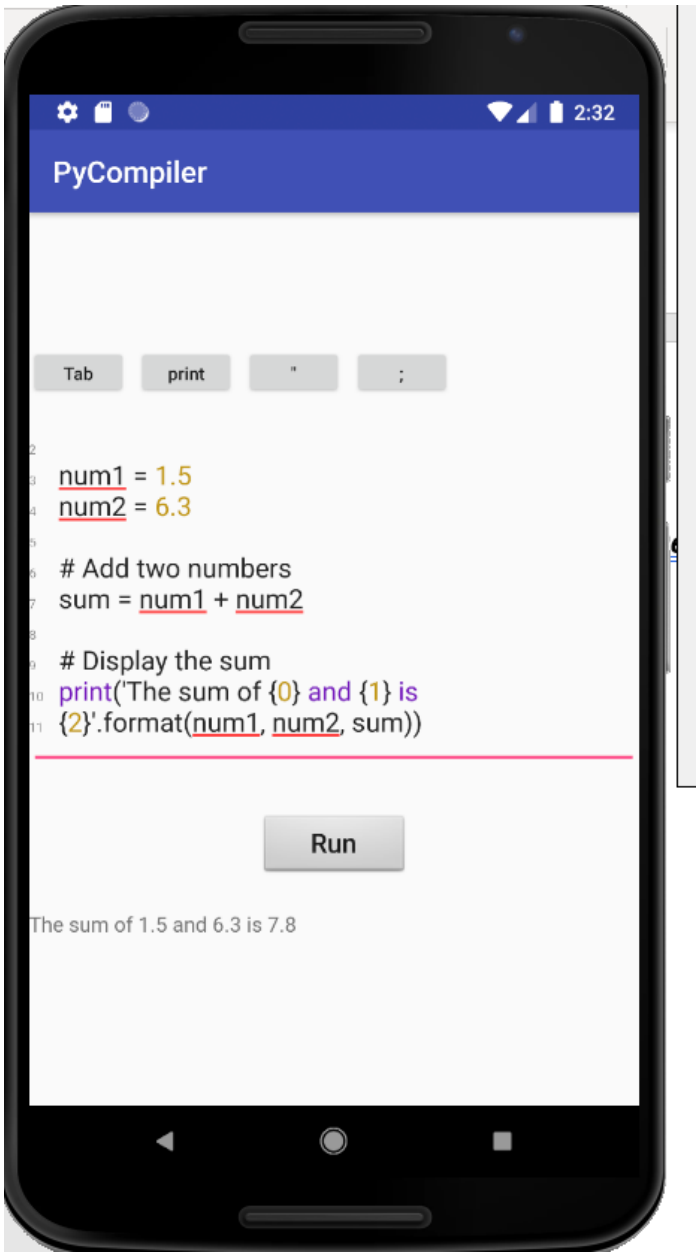

Fig: Addition of 2 numbers

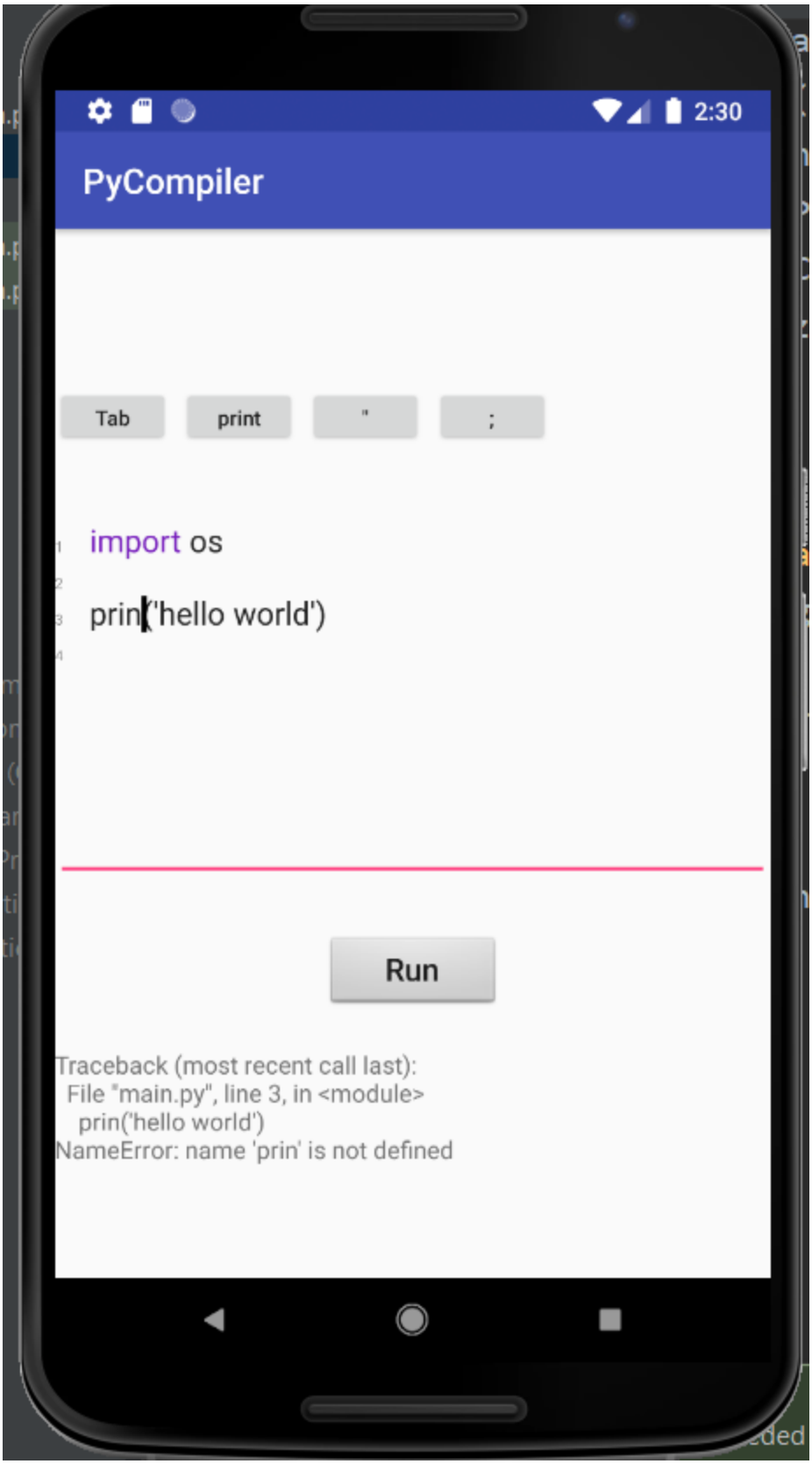

Fig: Wrong key word print

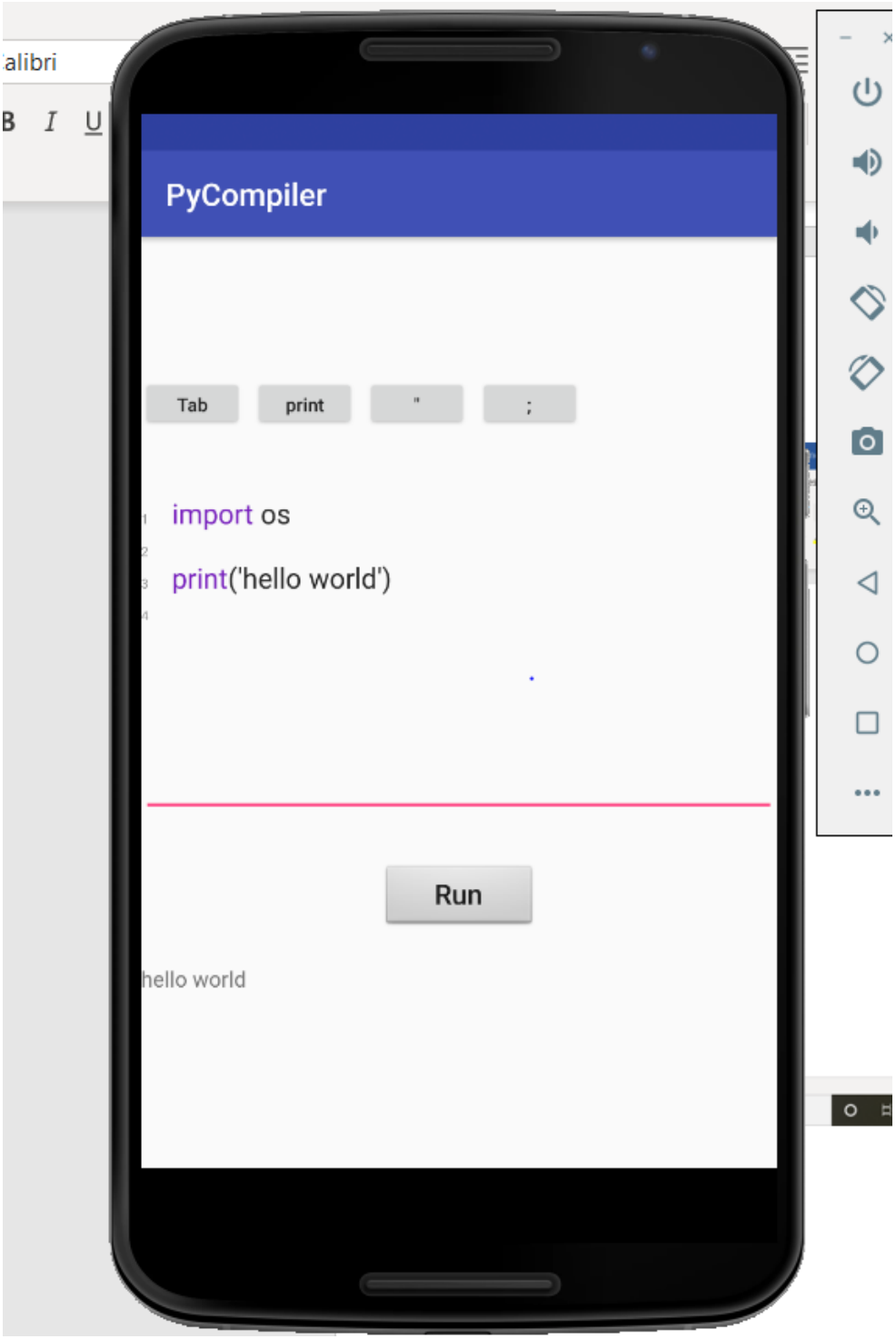

Fig: Hello world print

Code and Tests:

The app delivers user friendly UI and shows suggestions for syntaxes for a selected few things like print, for loop, if loop to help beginners understand python. The app mainly targets beginners who are new to python. Features like export, find and replace, and keeping it open source without ads would give us the competitive edge against our competitors and help us gain significant customer base.

Code Design metrics for important parts:

- API calls are used for compiling the code and okhttp requests will be well commented.
- The front-end files of the project are in the views directory with comments for each important line (For eg: If there is a button, comment what button it is).

The following screenshots are examples of how code is commented:

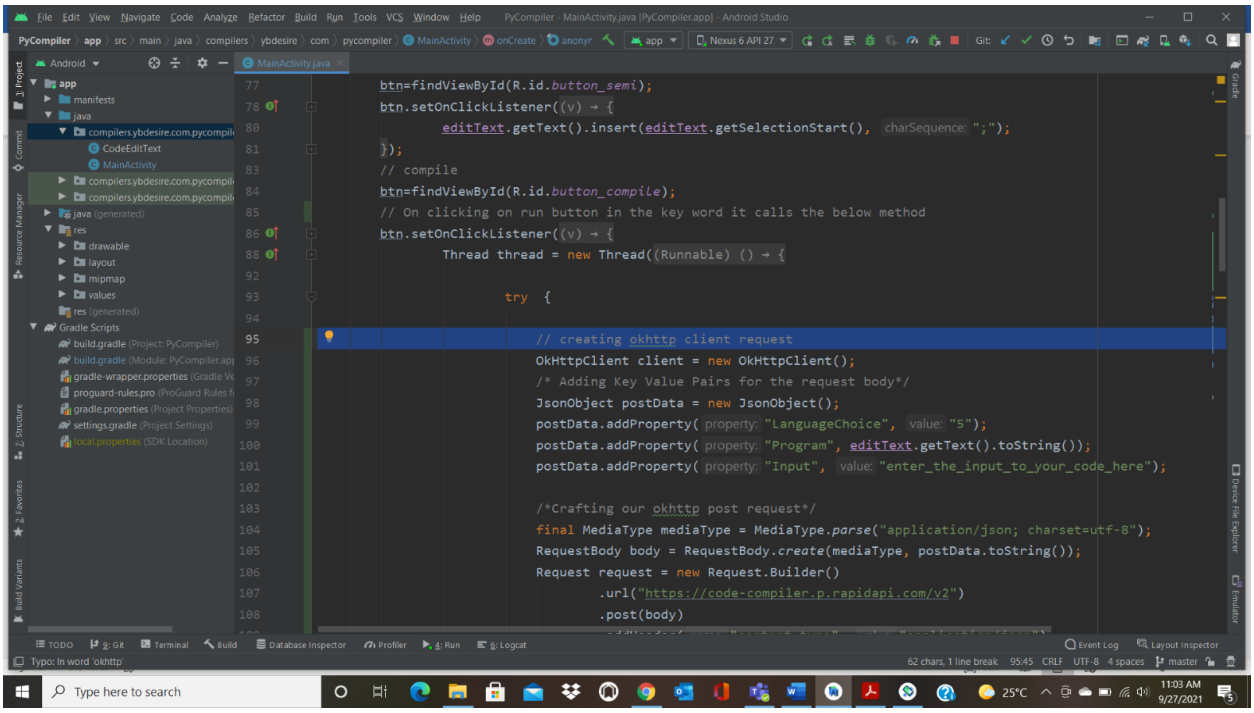

Fig: Creating a okhttp client request

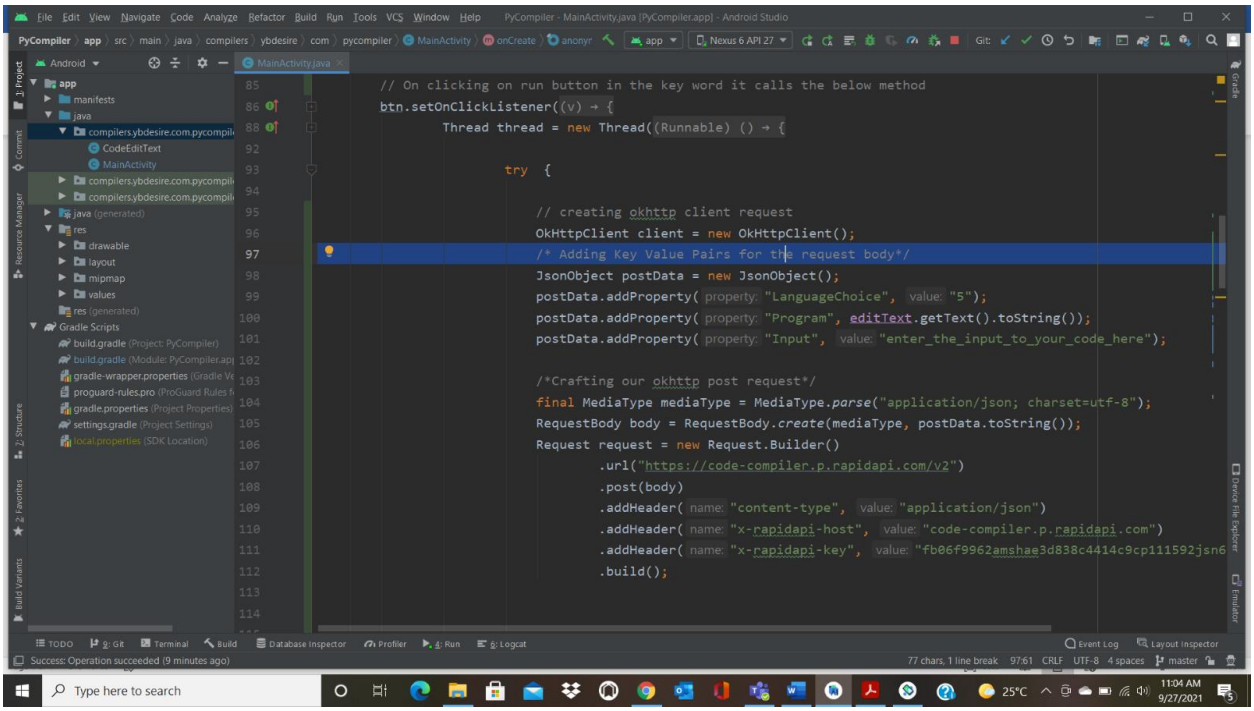

Fig: Adding key value pairs for the request body.

Sample Test Cases :

Title	Description	Assumption/Precondition	Test Steps	Expected Result
Authentication of login	A registered user should be able to successfuly login with his credentials	User is already registered	1. Enter Email and password of the registered user. 2. Click on login.	If there are errors in the text fields, show that its wrong ID or password. If correct, user should login to home screen and see the compiler.
Compiler bugs	For any written code on the IDE, it should be able to show the output or show accurate errors for	User writes a piece of code in the editor tab of the app.	1. Enter the code. 2. Click on run.	A successful compilation should show us the output window. An unsuccessful compilation should show errors like indentation error, syntax error etc.

	the written code.			
Export Error	User should be able to export the written code as a python file.	User writes a piece of code and clicks on the option export.	1. Enter the code in the editor. 2. Click on export	User should be able to export the file as a .py file.
Find and Replace	User searches for a keyword in the code and tries to replace it.	User writes a keyword that needs to be searched in order to replace it.	1. Users code is already written. 2. Find and replace button is clicked and a keyword should be typed. 3. Click on search	Should find the exact keyword and not matching similar words.
Buttons in the app	This is a UI issue. Check if all the buttons in the app are positioned correctly, functioning properly and doing only things that it is supposed to do after getting clicked.	Functionality of buttons is written in the project code.	1. For login page, there is login button, click on it after entering details. 2. For compiler page, write a piece of code and enter Run. 3. Also in compiler page, click	1. After clicking on button it should validate the fields and authenticate. 2. It should do static code analysis and run the code. 3. It should open up a text box asking for a keyword to be searched.

			on find and replace option.	

How to run the app in android studio :

We can run our app two ways

1. By connecting real device with USB
2. We can run on emulator

We are now using option 2 running application on emulator
Steps to execute it: [3]

1. In Android Studio create an Android virtual Device (AVD) that the emulator can use to install and run your app.
2. In the toolbar, select your app from the run/debug configurations drop-down menu.
3. From the target device drop-down menu, select the AVD that you want to run your app on.

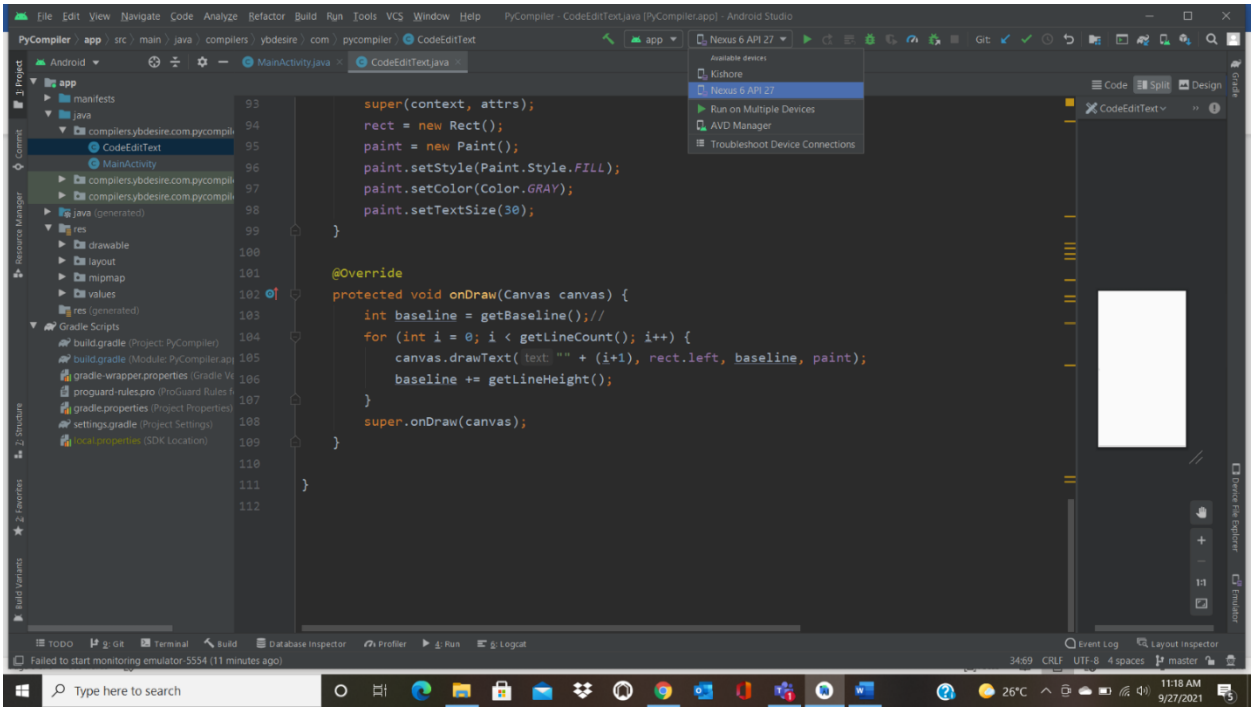

Fig: How to run the code with a virtual device

2. Click **Run**  .

Android Studio installs the app on the AVD and starts the emulator. You now see "Hello, World!" displayed in the app.

Customers and Users:

What kind of customers and how can the app be used?

While developing the project, the following application can be used by developers and testers in order to craft the application. However general customers who are beginners to python can also use this app to learn python programming. This is an open-source application and the end user, or the customer could be general audience who need the convenience of having an easily accessible compiler on their mobile.

Feedback and Interaction with Customers:

The project will remain open source and the code will be hosted on Github and all the people associated with this project will share their Email ID on the Github link in order to get feedback and resolve queries.

If the app is hosted in the Google playstore once it is completely developed, then we will frequently give responses to the reviews of customers, take feedback and update our app based on those reviews.

A demo of how the app will run will be created on YouTube and will constantly be monitored for feedback and suggestions.

References:

- [1] https://developer.android.com/studio/install
- [2] https://github.com/ybdesire/app_python_compiler
- https://docs.google.com/presentation/d/1pEGgGr0939PQe2HhzszcnwpCmPgo-jQjdUIVjG5-vUQ/edit?usp=sharing
- [3]https://developer.android.com/training/basics/firstapp/running-app
- [4]https://progman.in/
- [4]https://api.anayak.com.np/compile/v2
- [4]https://rapidapi.com/abdheshnayak/api/code-compiler/

- [4]https://github.com/dferreira-cvl/howto-okhttp-android