# Question 1

1. In which scenario, we must implement Content Provider in an application that uses SQLite database? (3)

Content provider implements a mechanism to share data between applications and shared data can be in the form of a file or an entire SQLite database. Therefore, we must implement Content Provider whenever we want to transfer data between applications that use SQLite database.

1. List two differences between Activities and Services. (4)

Activities: an entry point for interacting with user, therefore it needs an user interface. An activity usually represents as a single screen with a user interface. Activities’ lifecycle is as long as it is needed, it will be kept alive.

Services: a general-purpose entry point for keeping an app running in the background, so it does not need an user interface at all. Different from activities’ lifecycle, services’ lifecycle is divided into 2 different types. Firstly, services will stop running when they finish the assigned task. The other one is a bound service will keep running as long as another application component (the one it is bound to) is still running.

1. What is common between Activity, Service, and Broadcast Receiver? (3)

All of them are activated by intents. Intents bind individual component to each other at runtime, whether the component belongs to your app or another.

# Question 2

Consider an app compiled against API level 27 on a device running API level 29.

1. This usually works. Why? (2)

Due to Forward Compatibility (thanks to the additive characteristics of API frameworks), old apps can usually run on new platform versions. In this case, an app with API level 27 can run on a newer API level (29).

1. How could this go wrong? (2)

If a part of API level 27 is removed in API level 29 for some reason, then the app will not be able to run on the new platform version.

1. Can it be fixed without changing the API level of the app and the device? Explain.(2)

It can be fixed by adding the removed part of API level 27 that is required for the app to run into the newer platform version (29).