Unit I: List and RecyclerView

1. What is the primary purpose of a RecyclerView in Android?

   a) To display a single item

   b) To display a scrollable list or grid of items

   c) To manage application preferences

   d) To play videos

   Answer: b) To display a scrollable list or grid of items

2. Which component is commonly used for creating custom list views in Android?

   a) ListView

   b) RecyclerView

   c) GridView

   d) CardView

   Answer: b) RecyclerView

3. In Android, what is the purpose of CardView?

   a) To create clickable cards for navigation

   b) To display a list of items

   c) To display a pop-up card with information

   d) To provide a material design card-like container for other views

   Answer: d) To provide a material design card-like container for other views

4. What is the main advantage of using a RecyclerView over a ListView?

   a) RecyclerView supports custom item animations.

   b) RecyclerView is deprecated in modern Android development.

   c) ListView provides better performance.

   d) RecyclerView cannot display grid layouts.

   Answer: a) RecyclerView supports custom item animations.

5. Which layout manager is commonly used to create a grid of items in a RecyclerView?

a) LinearLayoutManager

b) GridLayout

c) GridLayoutManager

d) StaggeredGridLayoutManager

Answer: c) GridLayoutManager

Unit II: Background Processes

6. Which component is used for performing background tasks that require no user interaction in Android?

a) Activity

b) AsyncTask

c) BroadcastReceiver

d) Service

Answer: d) Service

7. What is the primary purpose of an AsyncTask in Android?

a) To perform tasks on the UI thread

b) To perform background tasks and update the UI thread

c) To handle incoming broadcast messages

d) To manage user preferences

Answer: b) To perform background tasks and update the UI thread

8. Which component is used to respond to system-wide broadcast events in Android?

a) BroadcastReceiver

b) Service

c) AsyncTask

d) Intent

Answer: a) BroadcastReceiver

9. Which of the following components is suitable for long-running tasks that may outlive an Activity's lifecycle?

   a) AsyncTask

   b) BroadcastReceiver

   c) Service

   d) Intent

   Answer: c) Service

10. What does the acronym "UI" stand for in "UI thread"?

   a) User Interface

   b) Unique Identifier

   c) Universal Inheritance

   d) Unresolved Issue

   Answer: a) User Interface

Unit II: Background Processes

11. What is a Bound Service in Android?

   a) A service that runs in the background and has no connection to other components

   b) A service that binds to a client and allows the client to interact with it

   c) A service that can only be started using an Intent

   d) A service that is always in the foreground

   Answer: b) A service that binds to a client and allows the client to interact with it

12. Which of the following statements is true about Unbound Services in Android?

   a) Unbound Services can be bound to multiple clients simultaneously.

   b) Unbound Services are always in the foreground.

   c) Unbound Services cannot communicate with other components.

   d) Unbound Services cannot be started by an Intent.

Answer: a) Unbound Services can be bound to multiple clients simultaneously.

13. What is the purpose of the JobScheduler in Android?

   a) To handle incoming broadcast messages

   b) To schedule background tasks to run at specified intervals or conditions

   c) To manage foreground services

   d) To create custom animations

   Answer: b) To schedule background tasks to run at specified intervals or conditions

14. When is it appropriate to use a Foreground Service in Android?

   a) When a task needs to run in the background without any user awareness

   b) When a task needs to run in the foreground and cannot be interrupted

   c) When a task needs to run for a long duration and needs to show a notification

   d) When a task requires user interaction

   Answer: c) When a task needs to run for a long duration and needs to show a notification

15. Which of the following components is associated with Background Services in Android?

   a) BroadcastReceiver

   b) AsyncTask

   c) IntentService

   d) Spinner

   Answer: c) IntentService

Unit II: Asynchronous Tasks

16. In Android, what is the primary purpose of Asynchronous Tasks?

   a) To perform tasks on the UI thread

b) To perform tasks that might block the main thread, such as network requests

c) To handle incoming broadcast messages

d) To manage user preferences

Answer: b) To perform tasks that might block the main thread, such as network requests

17. Which class is commonly used to create and execute asynchronous tasks in Android?

a) AsyncTask

b) BroadcastReceiver

c) Service

d) Intent

Answer: a) AsyncTask

18. What is the primary advantage of using AsyncTask over running tasks on the UI thread?

a) AsyncTask provides better performance.

b) AsyncTask simplifies code execution for background tasks.

c) AsyncTask guarantees that the UI thread will not be blocked.

d) AsyncTask can be used for long-running tasks without any issues.

Answer: b) AsyncTask simplifies code execution for background tasks.

19. In an AsyncTask, which method is used for background execution?

a) onPreExecute()

b) doInBackground()

c) onPostExecute()

d) onProgressUpdate()

Answer: b) doInBackground()

20. What is the purpose of the onProgressUpdate() method in an AsyncTask?

   a) To perform background tasks

   b) To update the UI thread with progress information

   c) To handle incoming broadcast messages

   d) To manage database operations

   Answer: b) To update the UI thread with progress information

Certainly! Here are more multiple-choice questions (MCQs) on the specified topics:

Unit II: Background Processes

21. What is the primary purpose of a BroadcastReceiver in Android?

   a) To perform background tasks

   b) To manage user preferences

   c) To respond to system-wide broadcast events

   d) To create custom animations

   Answer: c) To respond to system-wide broadcast events

22. Which of the following is NOT a valid use case for using a Service in Android?

   a) Playing music in the background

   b) Downloading files from the internet

   c) Responding to button clicks in an Activity

   d) Performing periodic tasks

   Answer: c) Responding to button clicks in an Activity

23. When should you use a Bound Service in Android?

   a) When a service needs to run in the foreground

   b) When a service needs to be started by multiple Intents

c) When a service needs to be bound to a client to exchange data

d) When a service needs to run only once

Answer: c) When a service needs to be bound to a client to exchange data

24. Which of the following components is responsible for scheduling tasks in the background using JobScheduler?

a) Activity

b) BroadcastReceiver

c) Service

d) JobScheduler itself

Answer: d) JobScheduler itself

25. What is the primary purpose of a Background Service in Android?

a) To handle UI interactions

b) To perform long-running tasks in the background

c) To display notifications

d) To manage application preferences

Answer: b) To perform long-running tasks in the background

Unit II: Asynchronous Tasks

26. In Android, what is the recommended way to perform network requests on a background thread?

a) Using AsyncTask

b) Using the main UI thread

c) Using a BroadcastReceiver

d) Using a Service

Answer: a) Using AsyncTask

27. Which method in an AsyncTask is responsible for updating the UI with the results of background processing?

   a) doInBackground()

   b) onPostExecute()

   c) onPreExecute()

   d) onProgressUpdate()

   Answer: b) onPostExecute()

28. What is the purpose of onPostExecute() in an AsyncTask?

   a) To perform background tasks

   b) To update the UI with results after background processing

   c) To initialize background tasks

   d) To handle exceptions during background execution

   Answer: b) To update the UI with results after background processing

29. Which of the following is NOT a benefit of using AsyncTask for background tasks?

   a) Simplified execution of background tasks

   b) Automatic handling of UI updates

   c) Guarantee of running in a separate thread

   d) Built-in support for parallel execution of tasks

   Answer: d) Built-in support for parallel execution of tasks

30. What can be a potential drawback of using AsyncTask for long-running tasks?

   a) Limited support for background execution

   b) Difficulty in managing UI updates

   c) Inability to run multiple tasks in parallel

d) None of the above

Answer: a) Limited support for background execution

Unit III: Delightful User Experience

31. Which Android resource type is commonly used to store images and icons?

    a) Drawables

    b) Styles

    c) Themes

    d) Layouts

    Answer: a) Drawables

32. What is the primary purpose of Styles and Themes in Android?

    a) To define the app's overall visual style

    b) To create custom animations

    c) To manage database operations

    d) To control device orientation

    Answer: a) To define the app's overall visual style

33. Which component is often associated with the concept of Material Design in Android?

    a) CardView

    b) Spinner

    c) ProgressBar

    d) DatePicker

    Answer: a) CardView

34. What is the role of a Floating Action Button (FAB) in Android?

    a) To display static information

    b) To provide navigation options

c) To perform a primary action in the current context

d) To show notifications

Answer: c) To perform a primary action in the current context

35. Which XML attribute is used to set the background color of a view in Android?

a) textColor

b) backgroundColor

c) backgroundTint

d) android:background

Answer: d) android:background

Bound Services:

36. What is the primary purpose of a Bound Service in Android?

a) To run tasks in the background without user interaction

b) To allow clients to bind to it and interact with it

c) To display notifications in the foreground

d) To broadcast events to other components

Answer: b) To allow clients to bind to it and interact with it

37. How do clients typically communicate with a Bound Service?

a) Through broadcast receivers

b) Using intents and activities

c) Through ContentProviders

d) Using a direct method call through a Binder

Answer: d) Using a direct method call through a Binder

38. What happens when all clients unbind from a Bound Service?

a) The service is destroyed.

b) The service continues to run in the background.

c) The service enters the foreground.

d) The service becomes unresponsive.

Answer: a) The service is destroyed.

39. In a Bound Service, which method is called when a client binds to the service?

a) onCreate()

b) onStartCommand()

c) onBind()

d) onConnected()

Answer: c) onBind()

Unbound Services:

40. What is the primary purpose of an Unbound Service in Android?

a) To run background tasks indefinitely

b) To allow clients to bind to it and interact with it

c) To display notifications in the foreground

d) To respond to system-wide broadcast events

Answer: a) To run background tasks indefinitely

41. How do you start an Unbound Service?

a) Using a direct method call

b) By binding to it using a Binder

c) Using the startService() method

d) By sending a broadcast intent

Answer: c) Using the startService() method

42. What happens when all clients unbind from an Unbound Service?

a) The service is destroyed.

b) The service continues to run in the background.

c) The service enters the foreground.

d) The service becomes unresponsive.

Answer: b) The service continues to run in the background.

43. In an Unbound Service, which method is called when the service is started using startService()?

a) onCreate()

b) onStartCommand()

c) onBind()

d) onConnected()

Answer: b) onStartCommand()

Foreground Services:

44. What is the primary purpose of a Foreground Service in Android?

a) To run background tasks indefinitely

b) To allow clients to bind to it and interact with it

c) To display notifications in the foreground

d) To respond to system-wide broadcast events

Answer: c) To display notifications in the foreground

45. Why are Foreground Services important in Android?

a) They consume less memory.

b) They can run indefinitely without any user notification.

c) They have higher priority and are less likely to be killed by the system.

d) They can execute tasks faster than other services.

Answer: c) They have higher priority and are less likely to be killed by the system.

46. What is typically included in a Foreground Service's notification?

a) The service's package name

b) The service's process ID

c) A title, description, and icon

d) The service's intent

Answer: c) A title, description, and icon

Job Scheduler Service:

47. What is the primary purpose of the Job Scheduler Service in Android?

a) To run background tasks indefinitely

b) To allow clients to bind to it and interact with it

c) To schedule and manage background tasks based on criteria

d) To display notifications in the foreground

Answer: c) To schedule and manage background tasks based on criteria

48. Which Android component is commonly used to schedule tasks with the Job Scheduler Service?

a) BroadcastReceiver

b) IntentService

c) AsyncTask

d) ServiceConnection

Answer: a) BroadcastReceiver

49. What is the minimum Android version required to use the Job Scheduler Service?

a) Android 2.3 (Gingerbread)

b) Android 4.0 (Ice Cream Sandwich)

c) Android 5.0 (Lollipop)

d) Android 6.0 (Marshmallow)

Answer: c) Android 5.0 (Lollipop)

50. How does the Job Scheduler Service improve power efficiency compared to traditional background services?

a) It runs tasks more frequently.

b) It allows tasks to run indefinitely.

c) It batches and optimizes task execution to reduce battery usage.

d) It requires tasks to run in the foreground.

Answer: c) It batches and optimizes task execution to reduce battery usage.

Bound Services:

51. In a Bound Service, what is a Binder?

a) A user interface component

b) A lightweight thread

c) An interface for connecting with the service

d) A data storage container

Answer: c) An interface for connecting with the service

52. What is the primary use case for a Bound Service?

a) Background audio playback

b) Long-running computation on the UI thread

c) Displaying notifications

d) Handling incoming SMS messages

Answer: a) Background audio playback

53. Which method of a Bound Service is called when a client unbinds from the service?

a) onDestroy()

b) onUnbind()

c) onDisconnected()

d) onServiceDisconnected()

Answer: b) onUnbind()

Unbound Services:

54. In an Unbound Service, how do you communicate with the service from an activity?

a) Using a direct method call

b) By binding to it using a Binder

c) Through a broadcast receiver

d) By starting the service using an intent

Answer: a) Using a direct method call

55. When is an Unbound Service typically used?

a) When you need to perform a task in the foreground

b) When you want to run a task indefinitely in the background

c) When you need to display notifications

d) When you want to respond to incoming SMS messages

Answer: b) When you want to run a task indefinitely in the background

56. What method is called when you start an Unbound Service using startService()?

a) onCreate()

b) onStartCommand()

c) onBind()

d) onServiceStarted()

Answer: b) onStartCommand()

Foreground Services:

57. Why might you use a Foreground Service to play music in an app?

a) It consumes less CPU and memory.

b) It can run in the background without any notification.

c) It has higher priority and is less likely to be terminated.

d) It provides better audio quality.

Answer: c) It has higher priority and is less likely to be terminated.

58. What is a common use case for a Foreground Service?

a) Long-running computations

b) Sending SMS messages

c) Audio playback with a notification

d) Displaying ads in an app

Answer: c) Audio playback with a notification

59. In a Foreground Service notification, what is the PendingIntent used for?

a) To dismiss the notification

b) To pause and resume the service

c) To open the app's main activity

d) To start a new service

Answer: b) To pause and resume the service

Job Scheduler Service:

60. What is the primary benefit of using the Job Scheduler Service for background tasks?

a) It allows tasks to run indefinitely.

b) It improves power efficiency and performance.

c) It simplifies the code for background tasks.

d) It provides direct access to system resources.

Answer: b) It improves power efficiency and performance.

61. How does the Job Scheduler Service determine the optimal time to execute a task?

a) It relies on the device's hardware clock.

b) It executes tasks immediately upon request.

c) It batches tasks together based on criteria and device conditions.

d) It uses a fixed time interval for all tasks.

Answer: c) It batches tasks together based on criteria and device conditions.

62. Which Android component is responsible for receiving the callback when a scheduled job is executed by the Job Scheduler Service?

a) ServiceConnection

b) BroadcastReceiver

c) AsyncTask

d) IntentService

Answer: b) BroadcastReceiver

63. What is a Broadcast Receiver in Android?

  a) A component used to send messages between activities

  b) A component used to broadcast messages system-wide

  c) A component used to send SMS messages

  d) A component used for database operations

  Answer: b) A component used to broadcast messages system-wide

64. Which of the following is true about Broadcast Receivers?

  a) They can only receive broadcasts from system apps.

  b) They can receive broadcasts sent by the system or other apps.

  c) They can send broadcasts to other apps.

  d) They are only used for Wi-Fi-related tasks.

  Answer: b) They can receive broadcasts sent by the system or other apps.

65. What is the primary purpose of registering a Broadcast Receiver dynamically in code (using `registerReceiver`)?

  a) To receive broadcasts in the background without user interaction

  b) To send broadcasts to other apps

  c) To request permissions for sensitive operations

  d) To define broadcast actions in the AndroidManifest.xml file

  Answer: a) To receive broadcasts in the background without user interaction

66. Which method is called when a Broadcast Receiver receives a broadcast?

  a) `onCreate()`

  b) `onStart()`

c) `onReceive()`

d) `onActivityResult()`

Answer: c) `onReceive()`

67. Which of the following is NOT a standard broadcast action in Android?

a) `ACTION_BATTERY_LOW`

b) `ACTION_BOOT_COMPLETED`

c) `ACTION_SEND_EMAIL`

d) `ACTION_TIME_TICK`

Answer: c) `ACTION_SEND_EMAIL`

68. What permission is required to receive the `ACTION_BOOT_COMPLETED` broadcast?

a) No specific permission is required.

b) `android.permission.RECEIVE_BOOT_COMPLETED`

c) `android.permission.BOOT_COMPLETED`

d) `android.permission.START_ON_BOOT`

Answer: b) `android.permission.RECEIVE_BOOT_COMPLETED`

69. Which type of BroadcastReceiver registration is suitable for receiving broadcasts even when the app is not running?

a) Static registration in AndroidManifest.xml

b) Dynamic registration using `registerReceiver()` in an activity

c) Dynamic registration using `registerReceiver()` in a service

d) All types of registration work the same way.

Answer: a) Static registration in AndroidManifest.xml

70. What is the purpose of using an explicit Intent filter for a BroadcastReceiver?

a) To receive broadcasts from any app in the system

b) To receive broadcasts only from a specific sender or component

c) To broadcast messages to other apps

d) To receive broadcasts from all apps on the device

Answer: b) To receive broadcasts only from a specific sender or component

71. When registering a BroadcastReceiver dynamically in code, what is required for the BroadcastReceiver to receive a broadcast?

a) Specifying the broadcast action in AndroidManifest.xml

b) Requesting the `android.permission.BROADCAST` permission

c) Including the `<receiver>` tag in the AndroidManifest.xml file

d) Specifying the broadcast action and IntentFilter in code

Answer: d) Specifying the broadcast action and IntentFilter in code

72. Which of the following components can send broadcasts in Android?

a) Activities and Services

b) Broadcast Receivers and Content Providers

c) Activities and Broadcast Receivers

d) Services and Content Providers

Answer: b) Broadcast Receivers and Content Providers