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Executing Background Work with WorkManager in Android

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Overview

- WorkManager
- Types of Persistent Work
- Running a One-Time Work

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Introduction

- What is WorkManager

- When to use WorkManager
  - Start Background Work even when App process is not running.
  - Start Periodic Work in the background.
  - Start a work when certain conditions are satisfied.

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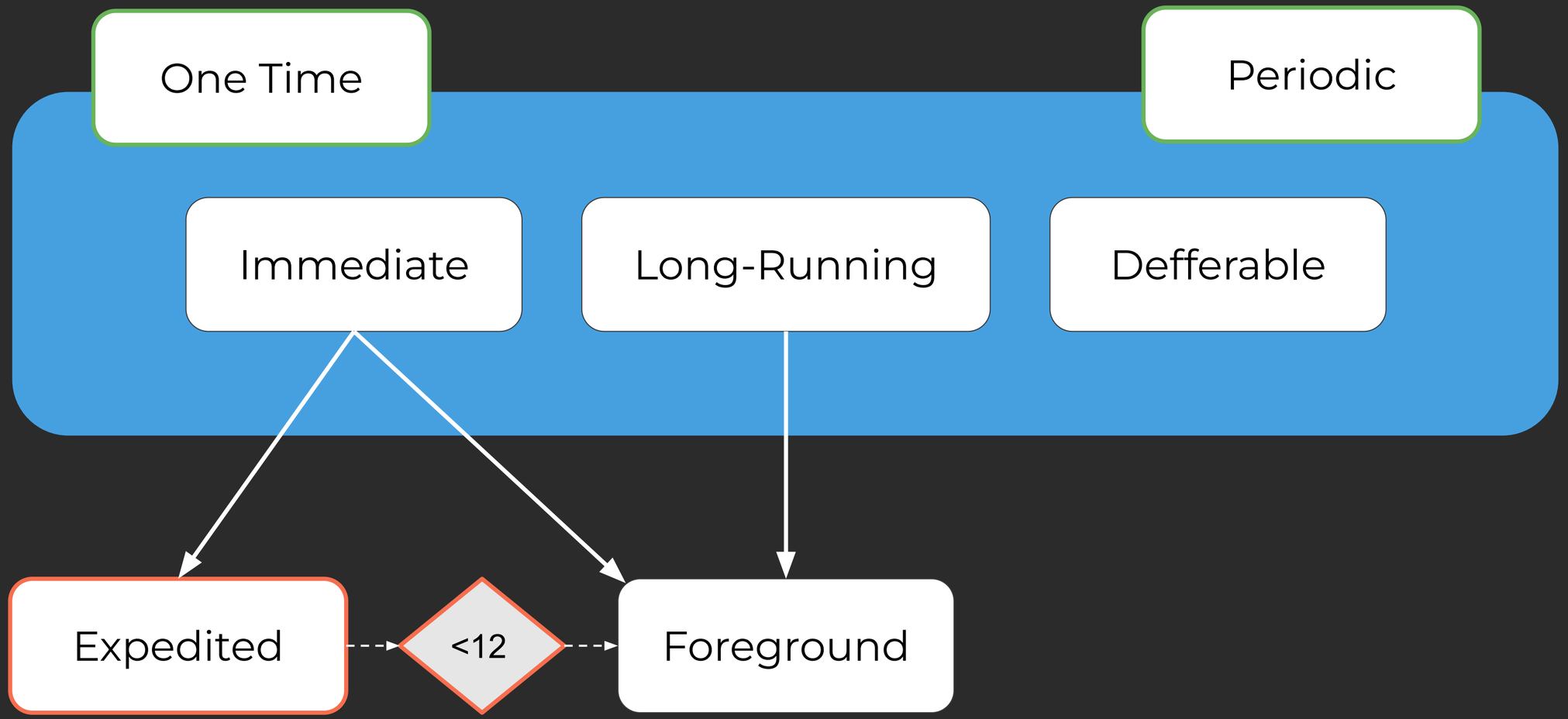
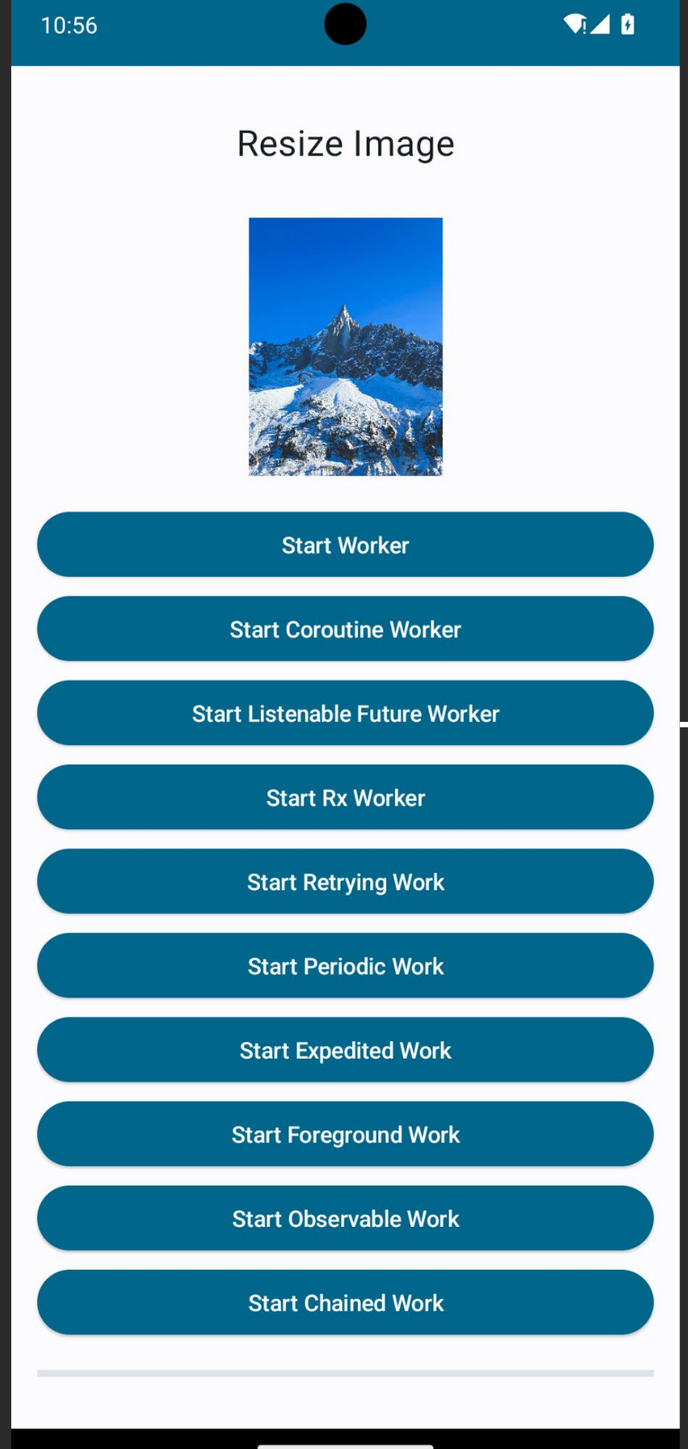
Types of Persistent Work

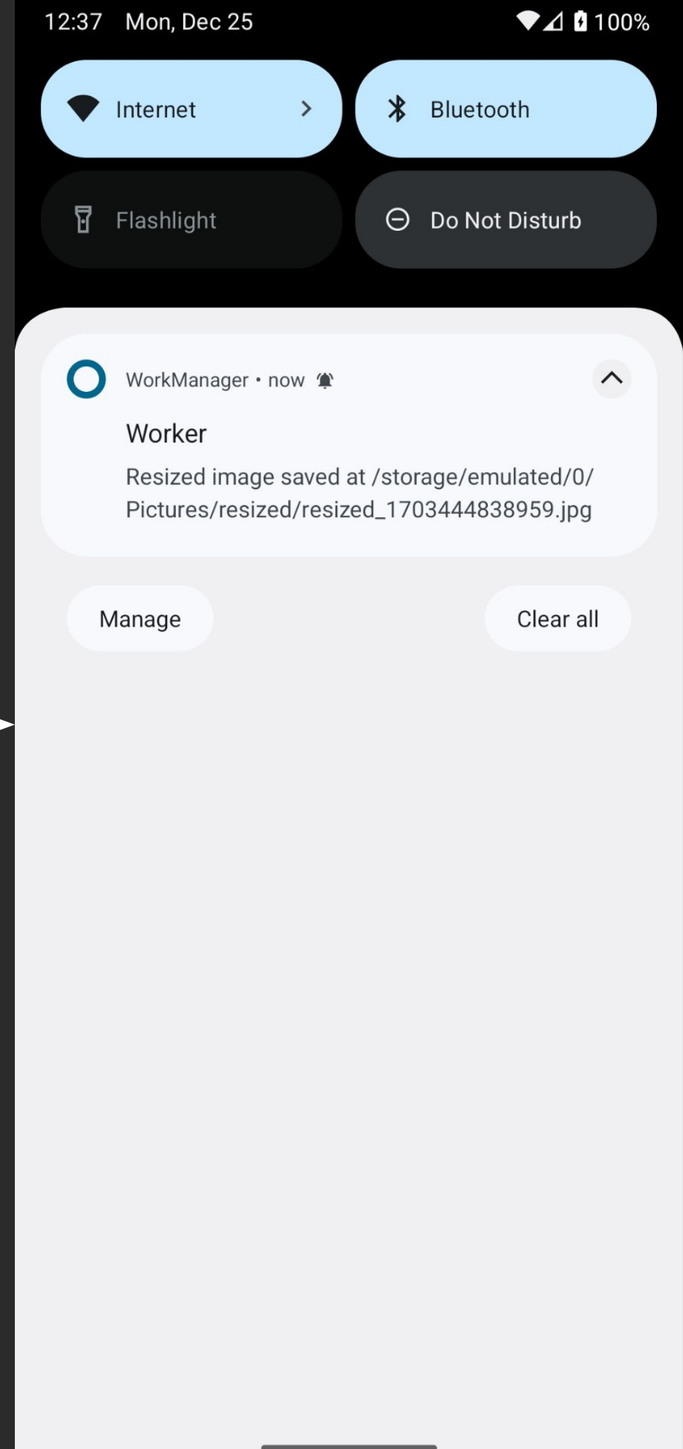


Course Demo App

Image Resizer

- Libraries used:
  - WorkManager
  - Coroutines
  - Compose (UI)





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Threading & Chaining in WorkManager

Overview

- Threading in WorkManager
- Chaining in WorkManager

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Threading

- What are different types of threading mechanisms provided by WorkManager ?
  - Worker
  - CoroutineWorker
  - RxWorker
  - ListenableWorker

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Chaining

- How to chain multiple works together ?

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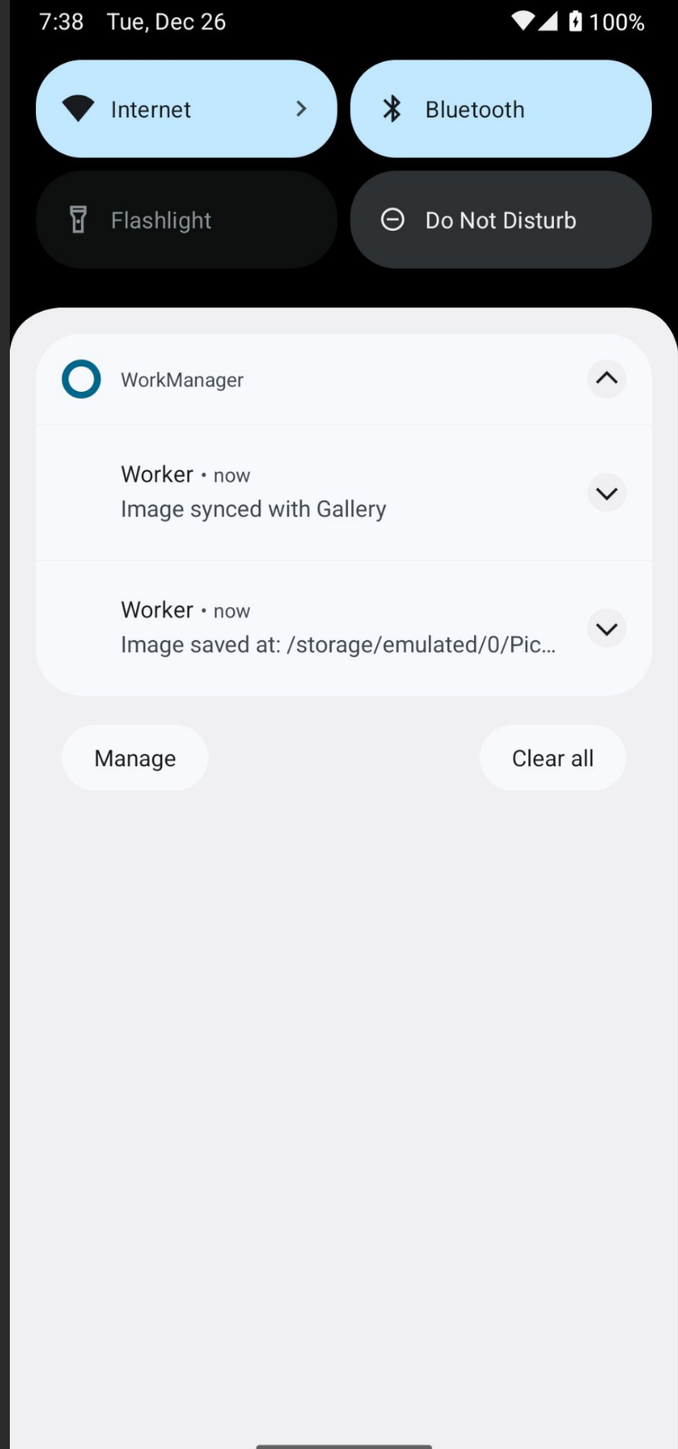
Chaining


7:38 Tue, Dec 26
100%
Internet
Bluetooth
Flashlight
Do Not Disturb
WorkManager
Worker • now
Image synced with Gallery
Worker • now
Image saved at: /storage/emulated/0/Pic...
Manage
Clear all

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Constraints in Work, Periodic Workers and Retrying Failed Work

Overview

- Retrying a Work
- Constraints In WorkManager
- Periodic Work

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Retrying a Work

- How to Retry a Failed Work ?

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Constraints In WorkManager

- What are Constraints
- When to use Constraints
  - When there is a need to meet some condition in order for the Work to execute. For example: Active Network connection, Charging, Not Low-Storage, Not Low-Battery etc

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Periodic Work

- What is Periodic Work

- When to use Periodic Work
  When we need to start a work and keep it re-running periodically using a specified interval between two Works.

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Limitations of Periodic Work

- What are the limitations of Periodic Work
  - Minimum interval between Workers is 15 minutes.
  - Output for Periodic work is not available due to its states.
    - Enqueued -> Running -> Enqueued
  - Periodic Work doesn't guarantee to run on specific time.

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Work Progress & Status, Expedited & Foreground Work

Overview

- Observing Task Progress and Status
- Expedited and Foreground Work

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Observing a Work

- getWorkInfoById(workId)
  - Gets a ListenableFuture of the WorkInfo for a given work id.
- getWorkInfosByTag(tagName)
  - Gets a ListenableFuture of the WorkInfo for all work for a given tag.
- getWorkInfosForUniqueWork(uniqueWorkName)
  - Gets a ListenableFuture of the WorkInfo for all work in a work chain with a given unique name.
- getWorkInfos(workQuery)
  - Gets the ListenableFuture of the List of WorkInfo for all work referenced by the WorkQuery specification.

Observing a Work

- LiveData
  - getWorkInfoByIdLiveData(workId)
  - getWorkInfosByTagLiveData(tagName)
  - getWorkInfosForUniqueWorkLiveData(uniqueWorkName)
  - getWorkInfosLiveData(workQuery)

- Flow
  - getWorkInfoByIdFlow(workId)
  - getWorkInfosByTagFlow(tagName)
  - getWorkInfosForUniqueWorkFlow(uniqueWorkName)
  - getWorkInfosFlow(workQuery)

Code Challenge

```
workManager.getWorkInfoByIdFlow(workId)
```

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Coding Challenge Solution

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Expedited Work

- What is Expedited Work and When to use it ?
  - Starting a time-critical work that needs to start immediately.

- Limitations
  - System allocated execution time quota for Expedited Jobs.

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Foreground Work

- What is Foreground Work and When to use Foreground Work ?
  - When we need to notify user about the running task.

Summary

- Introduction To WorkManager
- When to use WorkManager?
- Types of Persistent Work: Immediate, Long Running and Deferrable
- Running a One-Time Work
- Chaining In WorkManager
- Threading In WorkManager
- Retry Workers
- Constraints In WorkManager
- Periodic Work
- Expedited and Foreground Work
- Observing Task Progress and Status

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Thank You!

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