Threads - AsyncTask

Ever seen?

Application not responding

Threads - what is a thread

“Multiple threads can exist within one process, executing concurrently and sharing resources such as memory, while different processes do not share these resources. In particular, the threads of a process share its executable code and the values of its variables at any given time.”

https://en.wikipedia.org/wiki/Thread_(computing)

Threads in Android

```
public void onClick(View v) {
    new Thread(new Runnable() {
        public void run() {
            // a potentially  time consuming task
            final Bitmap bitmap =
                    processBitMap("image.png");
            mImageView.post(new Runnable() {
                public void run() {
                    mImageView.setImageBitmap(bitmap);
                }
            });
        }
    }).start();
}

// This implementation is thread-safe: the background operation is done from a separate
// thread while the ImageView is always manipulated from the UI thread.
```

Huah?

A bit raw?

Threads in Android - simplified

Introducing AsyncTask

AsyncTask

Let’s say you want to download URLs and update the GUI when done

AsyncTask

```
private class DownloadFilesTask extends AsyncTask< URL, Integer, Long> {
    ….
}
```

URL - the type of the parameters sent to the task upon execution

AsyncTask - doing

```
@Override
protected Long doInBackground(URL... urls) {
     int count = urls.length;
     long totalSize = 0;
     for (int i = 0; i < count; i++) {
         totalSize += Downloader.downloadFile(urls[i]);
         publishProgress((int) ((i / (float) count) * 100));
         // Escape early if cancel() is called
         if (isCancelled()) break;
     }
     return totalSize;
 }
```

AsyncTask - starting

```
new DownloadFilesTask().execute(url1, url2, url3);
```

Where url1, url2 and url3 are the URL instances we want to pass to the doInBackground method.

`execute` is a method inherited from AsyncTask.

AsyncTask

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private class DownloadFilesTask extends AsyncTask<URL, Integer,  Long> {
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URL - the type of the parameters sent to the task upon execution

Progress - the type of the progress units published during the background computation

Result, the type of the result of the background computation

AsyncTask - when done

```
protected void onPostExecute(Long result) {
    showDialog("Downloaded " + result + " bytes");
}
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AsyncTask - updating while working

```
protected void onProgressUpdate(Integer... progress) {
    setProgressPercent(progress[0]);
}
```

AsyncTask - putting the pieces together

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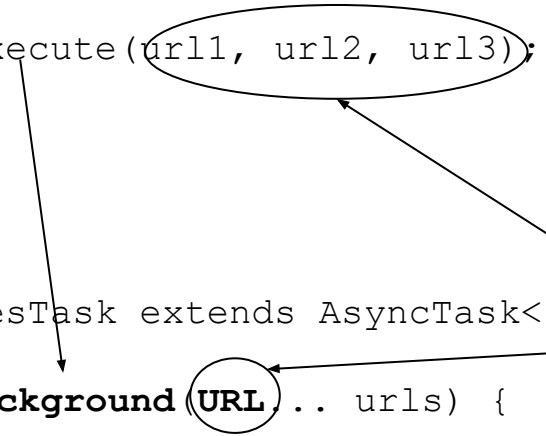

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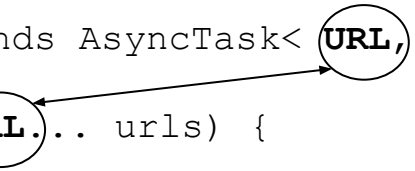

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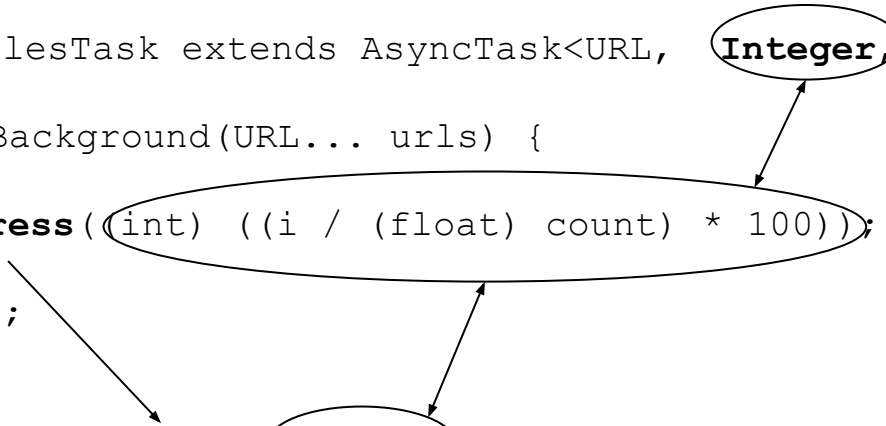

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