

Output to Files

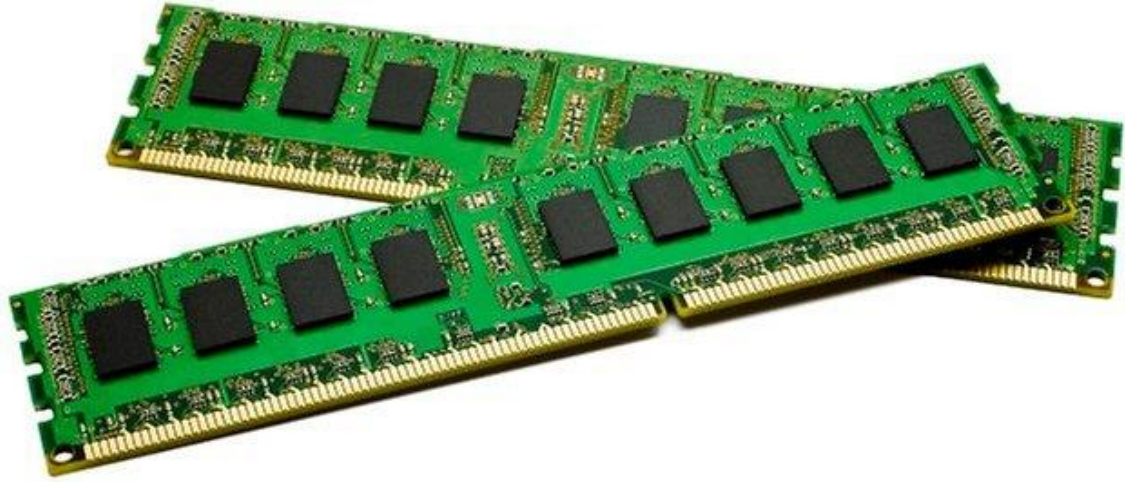
FileOutputStream

GILDAN
Ultra Cotton

programmer joke:

!false

It's funny
because it's true



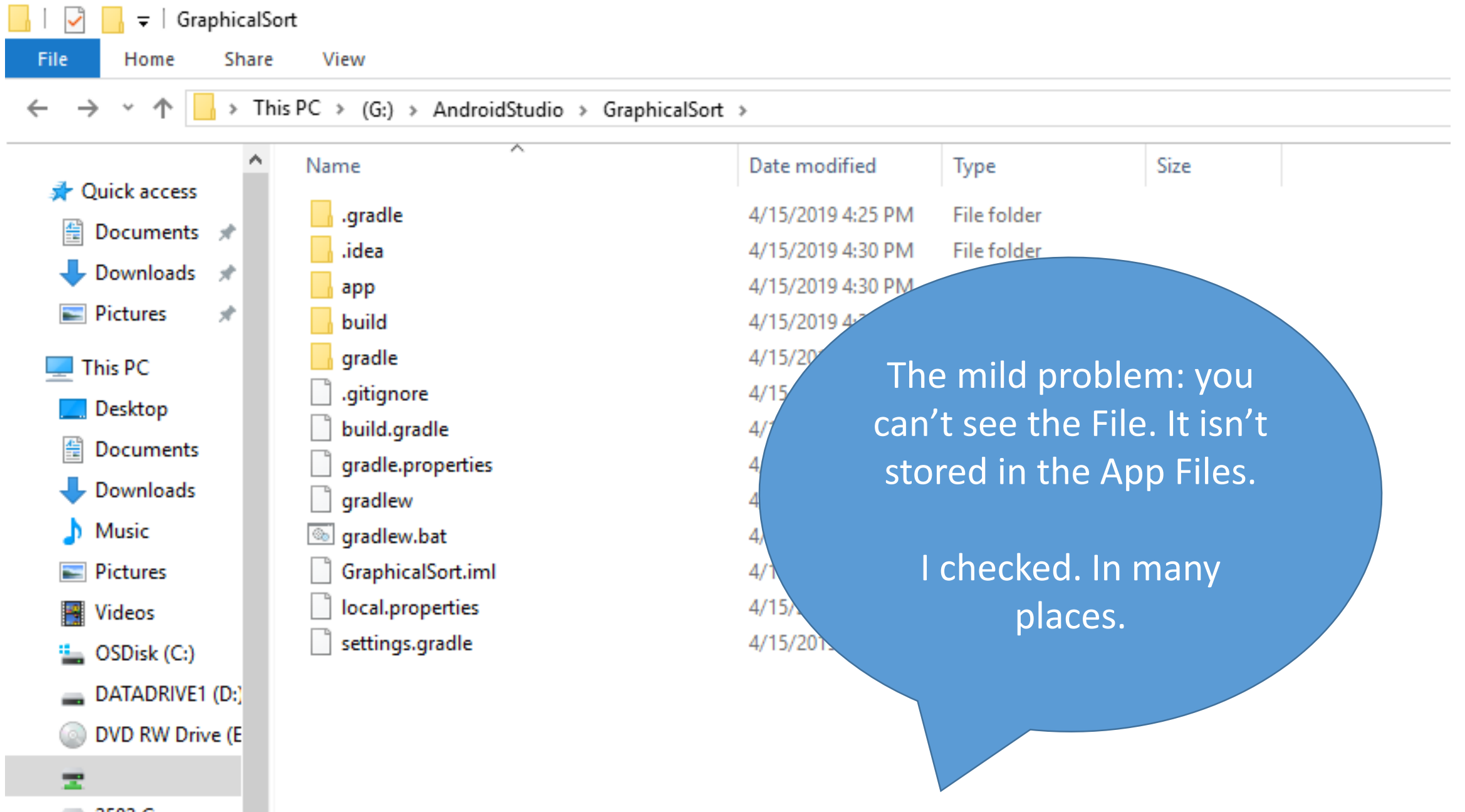
Temporary
Fast (close to CPU)

Variables
“Open” things



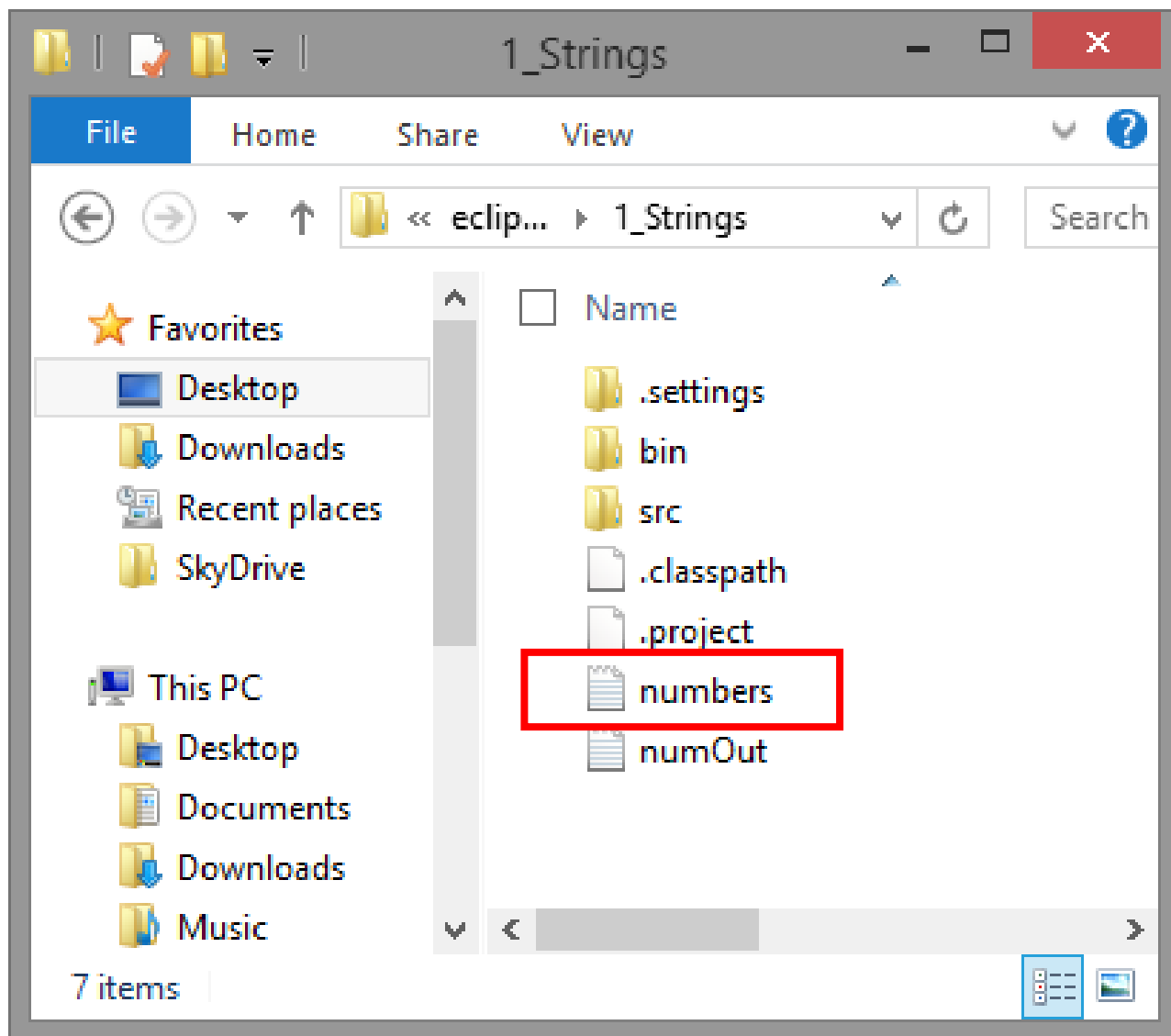
Permanent
Slow (far from CPU)

Files
“Saved” things



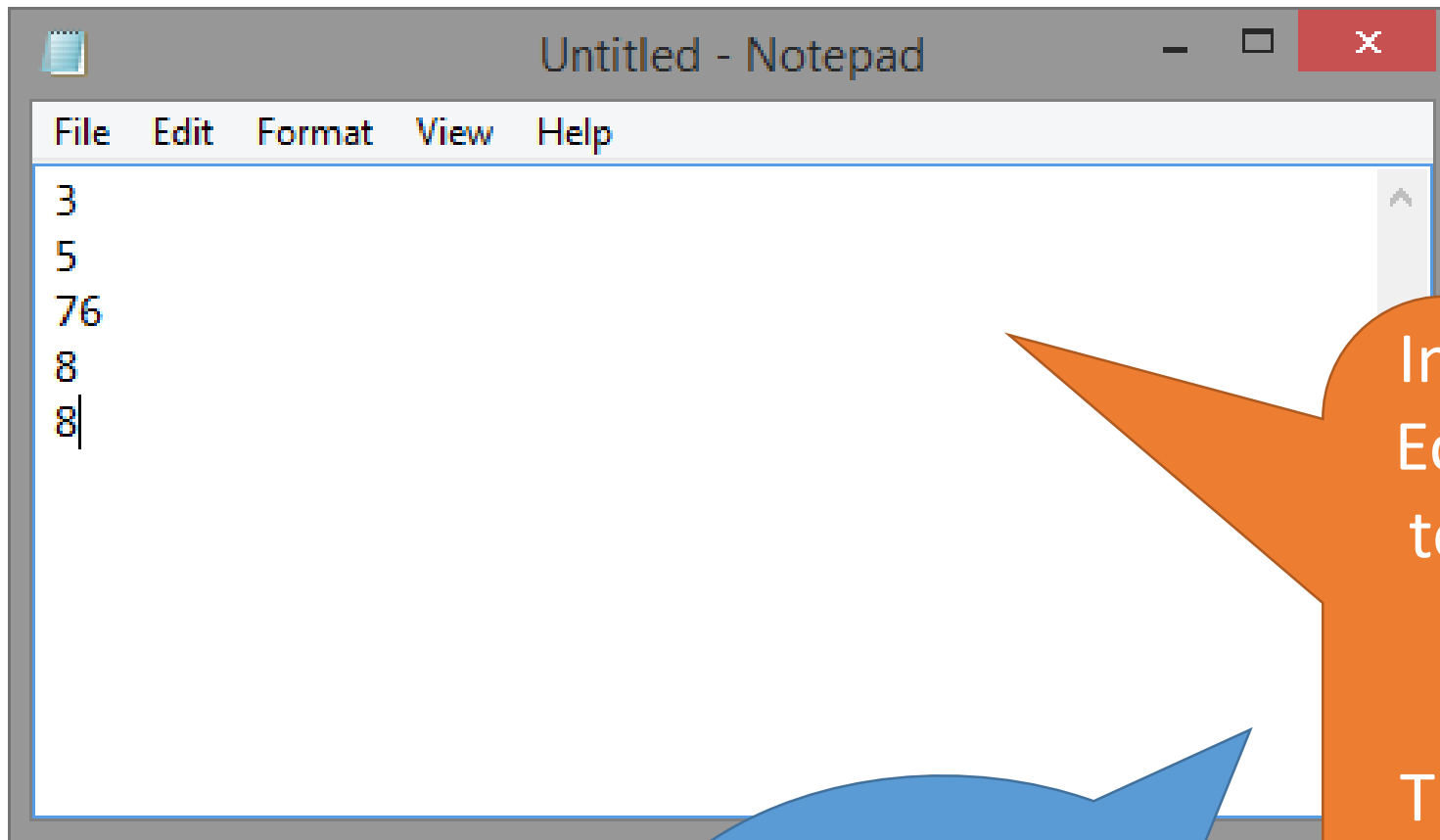
Folder/Item	Size	Date	Time	Permissions
storage	100	2018-01-21	11:21	drwxrwxrwx
OBOE-2405	512	1970-01-01	00:00	drwxrwx--x
emulated	4096	2018-01-05	03:46	drwx--x--x
0	4096	2018-01-22	06:15	drwxrwx--x
Alarms	4096	2018-01-05	03:46	drwxrwx--x
Android	4096	2018-01-05	03:48	drwxrwx--x
data	4096	2018-01-22	06:12	drwxrwx--x
com.dev2qa.example	4096	2018-01-22	06:12	drwxrwx--x
files	4096	2018-01-22	06:12	drwxrwx--x
email_private.txt	16	2018-01-22	06:12	-rw-rw----
com.google.android.apps	4096	2018-01-05	03:48	drwxrwx--x
com.google.android.apps	4096	2018-01-05	03:48	drwxrwx--x
com.google.android.gms	4096	2018-01-05	03:47	drwxrwx--x
com.google.android.goo	4096	2018-01-06	09:34	drwxrwx--x
com.google.android.musi	4096	2018-01-05	03:47	drwxrwx--x
com.google.android.vide	4096	2018-01-05	03:48	drwxrwx--x
com.google.android.youtu	4096	2018-01-05	03:47	drwxrwx--x
media	4096	2018-01-05	03:48	drwxrwx--x
DCIM	4096	2018-01-22	06:01	drwxrwx--x
email_public.txt	16	2018-01-22	06:01	-rw-rw----
Download	4096	2018-01-05	03:46	drwxrwx--x
Movies	4096	2018-01-05	03:46	drwxrwx--x
Music	4096	2018-01-05	03:46	drwxrwx--x
Notifications	4096	2018-01-05	03:46	drwxrwx--x
Pictures	4096	2018-01-05	03:46	drwxrwx--x

The file is built at the time of Emulation, or on the phone, and you don't have permission to see it on the computer.



FYI, on simpler programs, you can open them.

Inside the project folder, inside your workspace.



```
3
5
76
8
8|
```

However, this is what the file would look like, if you could see it.

In a simple environment, like Eclipse, you can use Notepad to make the files, then store them in the right folder.

This is a lot trickier in Studio, you need to mess with permissions.

Printing to files uses
the write
command.

```
out.write(4);  
out.write(a[i]);
```

You can print out either ints or bytes.
And yes, we don't know what bytes are.
So we will just use ints.



Files REQUIRE a
try/catch.

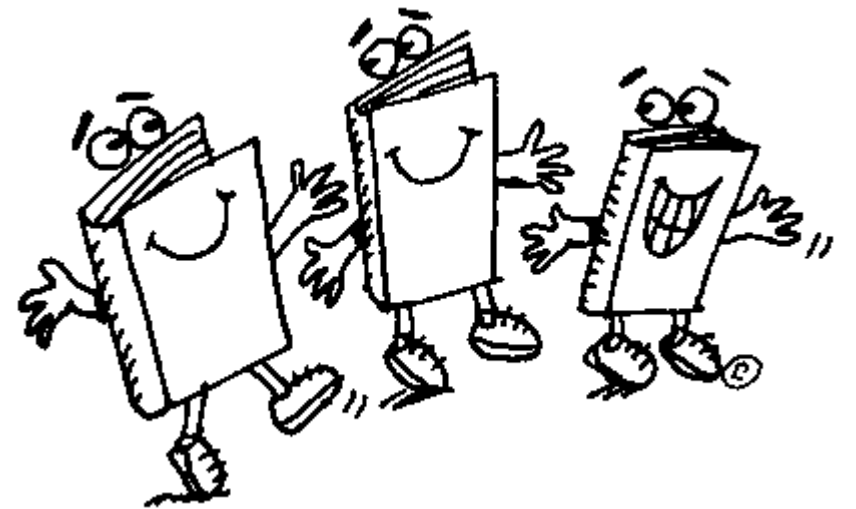
```
try {  
    //code!  
}  
catch (FileNotFoundException e) {  
    e.printStackTrace();  
}  
catch (IOException e) {  
    e.printStackTrace();  
}
```

They are external to the program, so as a programmer we can't trust they will actually be where we hope they are.

Files are from the io library.

```
import java.io.*;  
PrintWriter out;
```

The file object is a
“PrintWriter”



```
public void save(View view) {
    try {
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);
        for(int i=0; i<a.length; i++) {
            out.write(a[i]);
        }

        out.flush();
        out.close();
    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    }
}
```

Set up the onClick.

```
public void save(View view) {
    try {
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);
        for(int i=0; i<a.length; i++) {
            out.write(a[i]);
        }

        out.flush();
        out.close();
    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    }
}
```

Set up the onClick.

Open a FileOutputStream.
Like System.out.

```
public void save(View view) {
    try {
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);
        for(int i=0; i<a.length; i++) {
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        }

        out.flush();
        out.close();
    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    }
}
```

Set up the onClick.

```
public void save(View view) {
```

```
    try {  
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);  
        for(int i=0; i<a.length; i++) {  
            out.write(a[i]);  
        }  
  
        out.flush();  
        out.close();  
    } catch (FileNotFoundException e) {  
        e.printStackTrace();  
    } catch (IOException e) {  
        e.printStackTrace();  
    }  
}
```

Open a FileOutputStream.
Like System.out.

Send in the file name.

Set up the onClick.

Open a FileOutputStream.
Like System.out.

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public void save(View view) {  
    try {  
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);  
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            out.write(a[i]);  
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        out.flush();  
        out.close();  
    } catch (FileNotFoundException e) {  
        e.printStackTrace();  
    } catch (IOException e) {  
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    }  
}
```

Send in the file name.

Print out what you want.

Set up the onClick.

Open a FileOutputStream.
Like System.out.

```
public void save(View view) {  
    try {  
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);  
        for(int i=0; i<a.length; i++) {  
            out.write(a[i]);  
        }  
  
        out.flush();  
        out.close();  
    } catch (FileNotFoundException e) {  
        e.printStackTrace();  
    } catch (IOException e) {  
        e.printStackTrace();  
    }  
}
```

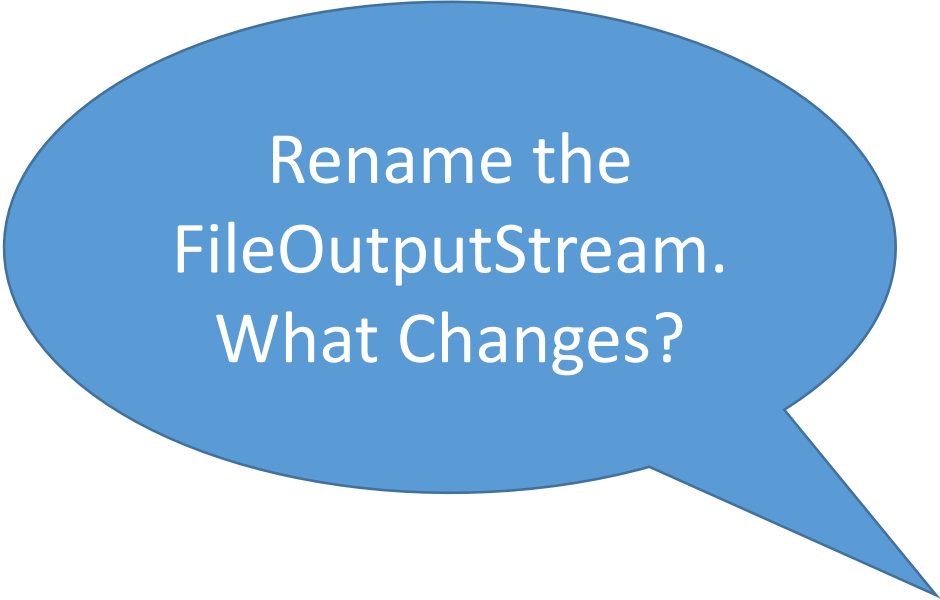
Send in the file name.

Print out what you want.

Close the file.


```
public void save(View view) {
    try {
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);
        for(int i=0; i<a.length; i++) {
            out.write(a[i]);
        }

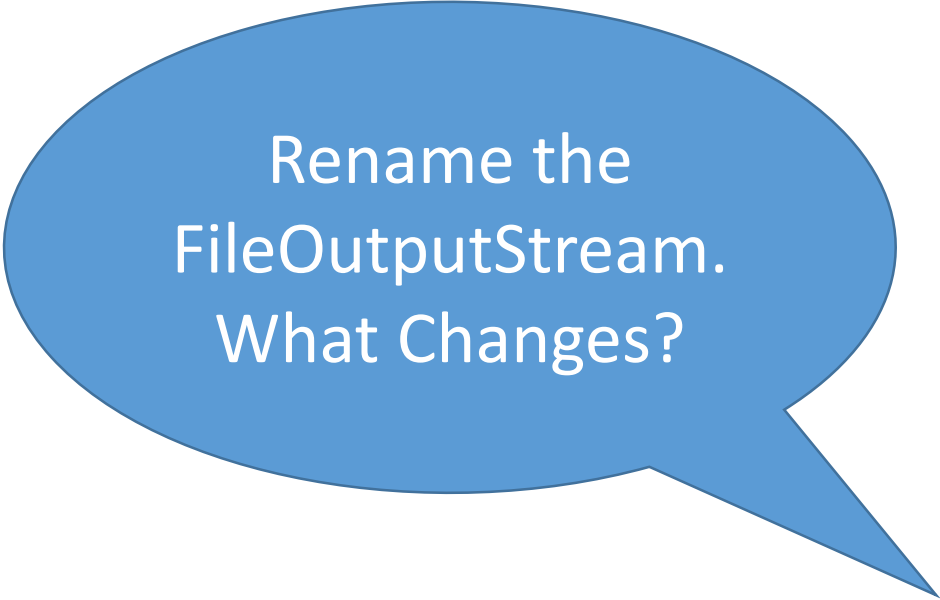
        out.flush();
        out.close();
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    } catch (IOException e) {
        e.printStackTrace();
    }
}
```



Rename the
FileOutputStream.
What Changes?

```
public void save(View view) {
    try {
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);
        for(int i=0; i<a.length; i++) {
            out.write(a[i]);
        }

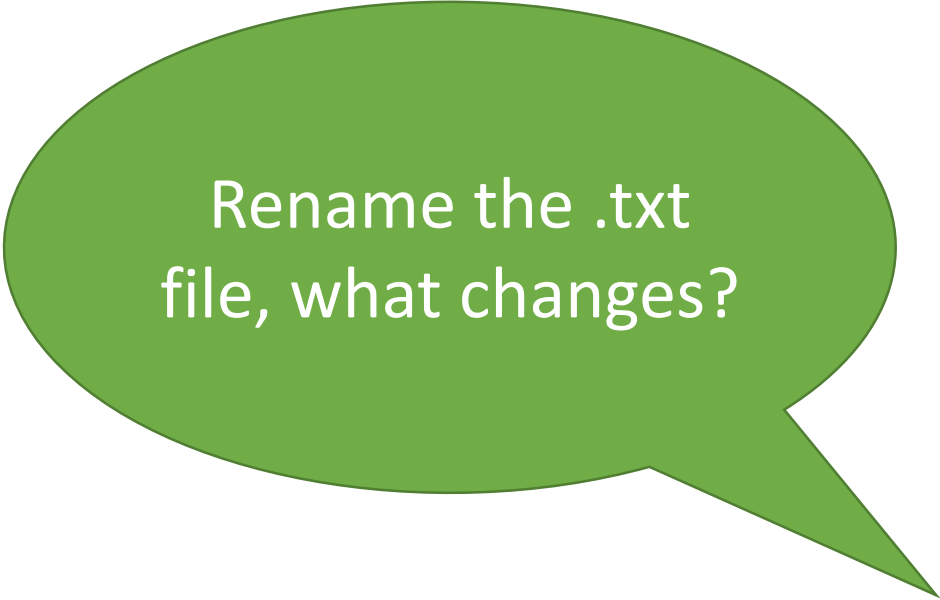
        out.flush();
        out.close();
    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
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    }
}
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    } catch (IOException e) {
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    }
}
```



Rename the .txt
file, what changes?

```
public void save(View view) {
    try {
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);
        for(int i=0; i<a.length; i++) {
            out.write(a[i]);
        }

        out.flush();
        out.close();
    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    }
}
```



Rename the .txt
file, what changes?

```
public void save(View view) {
    try {
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);
        for(int i=0; i<a.length; i++) {
            out.write(a[i]);
        }

        out.flush();
        out.close();
    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    }
}
```



Rename the array,
what changes?

```
public void save(View view) {
    try {
        FileOutputStream out = openFileOutput("data.txt", Activity.MODE_PRIVATE);
        for(int i=0; i<a.length; i++) {
            out.write(a[i]);
        }

        out.flush();
        out.close();
    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    }
}
```



Rename the array,
what changes?