EECS2030 (Section F) Fall 2022
Lab 0 Part 2
Review on Object-Oriented Programming in Java

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<u>Release</u> Date: Tuesday, September 13
<u>Due</u> Date: 14:00 EST, Friday, September 23

Texts in blue are hyperlinks to the corresponding documents/recordings.

Your lab assignment is **not** graded during the weekly scheduled lab sessions.

Follow the instructions to submit (via the web submit link) the required files for grading. **<u>Emailing your solutions to the instructor or TAs will not be accepted</u>**.

Policies

- **Your (submitted or un-submitted) solution to this lab exercise (which is not meant for the public) remains the property of the EECS department. Do not distribute or share your code in any public media (e.g., a non-private Github repository) in any way, shape, or form. The department reserves the right to take necessary actions upon found violations of this policy.**

- Refer to the course syllabus (under the **Course Policies** section) for how labs are supposed to be attempted.

- You are responsible for **<u>completing your submission by the set deadline</u>** (in order to receive the credit).

- Back up your work **periodically**, so as to minimize the damage should any sort of computer failures occur. Follow this tutorial series on setting up a **private** Github repository for your Java projects.

- The deadline is **strict** with no excuses: late submissions will **<u>not</u>** be accepted.

Contents

Learning Outcomes

By completing the assigned exercises of this lab, you are expected to be able to:

1. Use simple Linux commands on a terminal.

2. Exercise a simple workflow of Github.

3. Understand the Observe-Model-Execute process of object orientation.

4. In the Eclipse IDE (Integrated Development Environment):

   - Create a new Java project.
   - Create a new Java class serving as a console application (with the `main` method).
   - Understand the separation of concerns (using packages): `model`, `console_apps`, and `junit_tests`.
   - Write Java `model` classes composed of:
     - classes, attributes, methods (constructors, accessors, and mutators)
     - **single-valued, referenced-typed** attributes
     - **multi-valued, referenced-typed** attributes
     - **reference aliasing**
     - `new` keyword, `this` keyword, dot notation
   - Run a Java class with with the `main` method as a console Java application.
   - Write JUnit test cases manipulating the model classes via *assertions*.
   - Use the <u>debugger</u> to:
     - Examine the object *state* (i.e., attribute values)
     - Explore the program behaviour (via step over, step into, step out)
   - Export an existing project as an archive file.

5. On paper, <u>visualize</u> object creations and method calls.

Setting Working Environment: Eclipse, Remote Labs, Github

For details on installing Eclipse, creating an EECS account, using the remote lab, and creating a Github account, refer to the instructions for Lab0P1. Here is a video walking you through the setup process:

  https://www.youtube.com/watch?v=sYAcSyeoio8&list=PL5dxAmCmjv_6wy2m0yq2wObIWPz4tAxW6&index=1

1 Task 1: Complete Tutorial Videos

- Here is a tutorial series for you to review object-oriented programming (OOP) in Java, and to obtain hands-on experience on Eclipse IDE (required for this course):

  https://www.eecs.yorku.ca/~jackie/teaching/tutorials/index.html#refurbished_store

- As you study through the example Java classes in the tutorial videos, you are required to **type them out**:
  - **Spellings of names of the packages, files, classes, and methods must be exact (and case-sensitive), as we will run some automatic checks to grade the submitted files.**
  - Feel free to add comments or new Java classes/methods to experiment.

- **To submit for <u>Part 2</u> of your Lab0, complete the study of 17 tutorial videos (Parts 14 − 30). You are expected to re-produce <u>all</u> Java classes demonstrated in the tutorials.**

- **No additional exercises are required for Lab0P2 submission.**

- You can find the iPad notes illustrated in the tutorial videos here:

  https://www.eecs.yorku.ca/~jackie/teaching/tutorials/notes/Building%20an%20Apple%20Refurbished%20Store%20App%20in%20Java.pdf

2 Task 2: Study Materials

- Here is a list of <u>**required**</u> materials to study alongside with the review tutorials (Section 1):

  1. Slides on Classes and Objects:

       https://www.eecs.yorku.ca/~jackie/teaching/lectures/2022/F/EECS2030/slides/
                        01-Classes-and-Objects.pdf

  2. Written Notes:
     - Inferring Classes/Methods from JUnit Tests:
           https://www.eecs.yorku.ca/~jackie/teaching/lectures/2022/F/EECS2030/notes/
                        EECS2030_F22_Inferring_Classes_from_JUnit.pdf
     - Declaring and Manipulating Reference-Typed, Multi-Valued Attributes:
           https://www.eecs.yorku.ca/~jackie/teaching/lectures/2022/F/EECS2030/notes/
                        EECS2030_F22_Tracing_PointCollectorTester.pdf

     Note. Your coming <u>programming</u> and <u>written</u> tests will be based on the above slides and written notes.

- Here is a list of <u>**optional**</u> materials to study:

  1. Tutorial Videos on Introducing Procedural and Object-Oriented Programming in Java:

      https://www.eecs.yorku.ca/~jackie/teaching/tutorials/index.html#java_from_scratch_w21

     Specially:
     - Week 1: **Eclipse** work environment
     - Week 2c, 2d, 2e: **Debugger** in Eclipse
     - Weeks 6, 7, 8: **Classes** and **Objects**

  2. Lecture materials (recordings, slides, notes, codes) for EECS1022-W21:

          https://www.eecs.yorku.ca/~jackie/teaching/lectures/index.html#EECS1022_W21
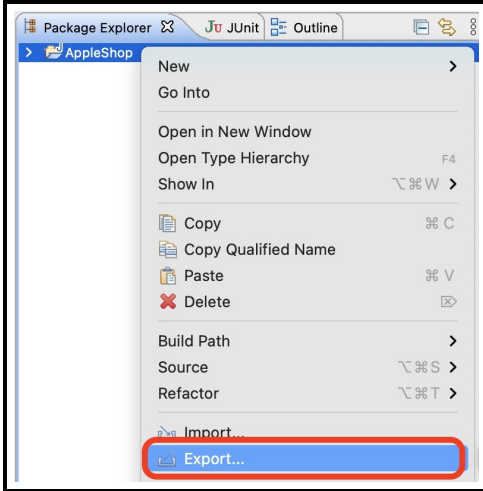
     You may refer to the relevant parts for which you find the need to review.

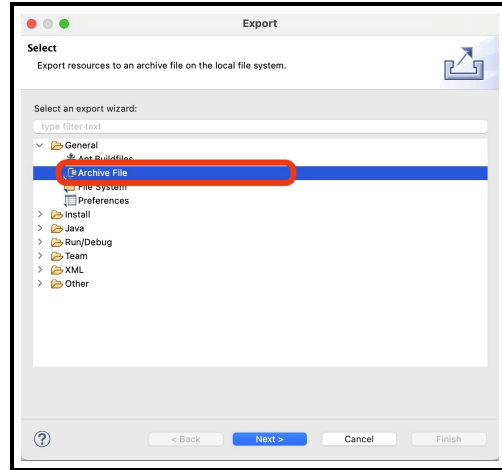# 3 Exporting the Completed Project

You are required to submit a Java project archive file (.zip) consisting all subfolders.

In Eclipse:

1. Right click on project `AppleShop`. Then click `Export`
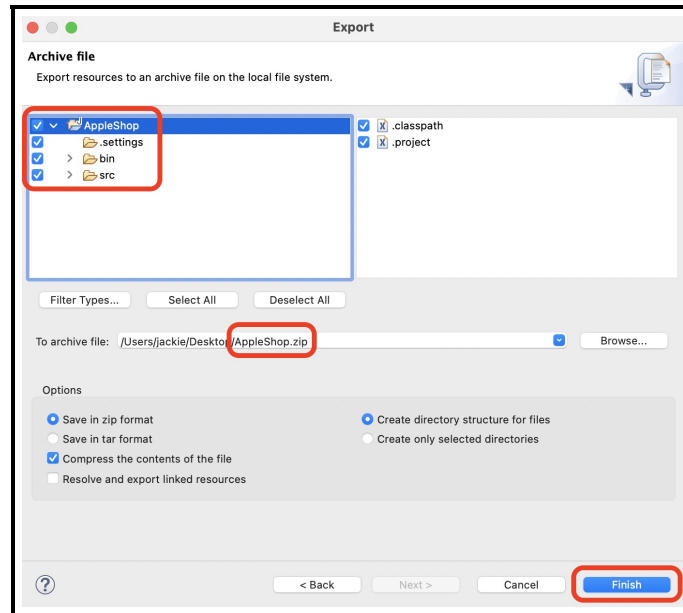

2. Under `General`, choose `Archive File`.

3. Check the top-level `AppleShop` .
Make sure that all subfolders are checked: **.settings**, **bin**, and **src**.
Under `To archive file:` browse to, e.g., desktop, and save it as `AppleShop.zip` (**case-sensitive**)
Then `Finish`.

Note. In case you have concerns about exporting and submitting the **.setting** subfolder: it will be kept confidential and access-protected on the EECS department server.

4 Submission

1. Verify that the project folder has the following structure:

```
AppleShop
├── bin
│   ├── console_apps
│   │   └── ProductApp.class
│   ├── junit_tests
│   │   ├── TestEntry.class
│   │   ├── TestProduct.class
│   │   └── TestRefurbishedStore.class
│   └── model
│       ├── Entry.class
│       ├── Product.class
│       └── RefurbishedStore.class
└── src
    ├── console_apps
    │   └── ProductApp.java
    ├── junit_tests
    │   ├── TestEntry.java
    │   ├── TestProduct.java
    │   └── TestRefurbishedStore.java
    └── model
        ├── Entry.java
        ├── Product.java
        └── RefurbishedStore.java
```
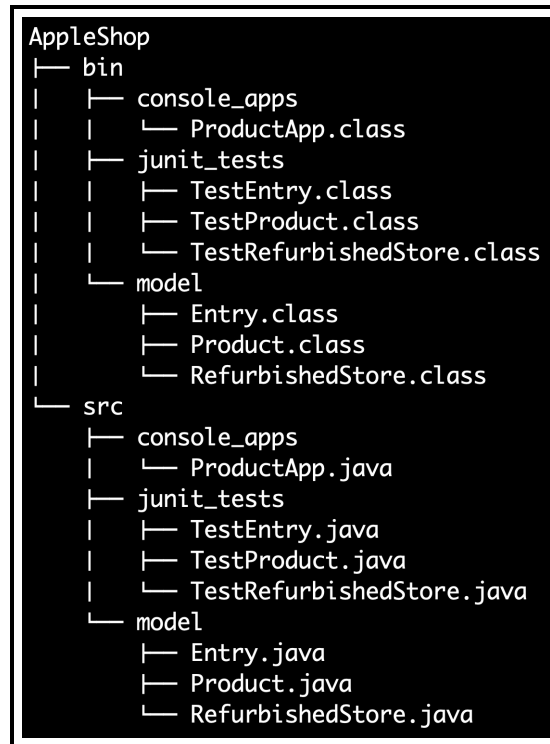
Figure 1: Lab0P2 Expected Project Structure

Names of the packages, files, classes, and methods must be exact (and case-sensitive), as we will run some automatic checks to grade the submitted files.

e.g., If you have a class `product.java` rather than `Product.java`, it's considered as wrong.

2. From Section 3, you have already exported your Java project on Eclipse as an archive file: `AppleShop.zip`.

Click on the following link (for which you will be prompted to enter your <u>EECS account</u> login credentials):

https:
//webapp.eecs.yorku.ca/submit/?acadyear=2022-23&term=F&course=2030F&assignment=Lab0P2

- You **must** login into the web submit page using your EECS login credentials (otherwise, your submitted folder on the EECS server may <u>not</u> be identified properly):

Web Submit Login

To access Web Submit:

- Use your **Passport York** account by <u>clicking here</u>, or,
- Use your EECS account by logging in below:

EECS Username:

EECS Password:

Login

Note. If you are prompted for your PPY login instead, then it might be due to an earlier login session. In this case, login first with your PPY account credentials, then **log out**. Then, clicking on the above submission link should lead you to the login page for EECS account credentials.

- Ensure that the correct academic year, term, course, and assignment are chosen. Then, browse to the archive file `AppleShop.zip` and click on `Submit Files`.

- You may upload <u>as many draft versions as you like</u> before the deadline – only the **latest** submitted version of your work <u>before the deadline</u> will be graded.

- It is your **sole responsibility** to **download and ensure** that:
  - The submitted zip file is the one you intend to be graded (e.g,. non-empty, not the starter code).
  - The unzipped project conforms to the structure as specified in Figure 1.