MET CS 622: Advanced Programming Techniques

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Why do you need to be a good software engineer before everything else?

Requirements for this course

- We do <u>not</u> teach **basic Java programming**, e.g. what is function, method, attribute, etc. and we expect you to be familiar with them.

- We do teach lots of new concepts in Java and advanced programming. Also we discuss **many tools and technologies** that are being used in a real-world environment, but **not discussed in Java books**.

- We do lots of programming and development **inside the class**. So, please start to love programming. Also, you should bring your laptop and ensure you have the required tool installed before every session.

- You should implement **lots of codes inside the class**. But do not worry if you think you might fall behind others in the class; we will help you with your coding.

- We use Java **JDK version 17** for this course; please be sure that your IDE has this version and not a newer version.

What you need to do?

- Java Standard Edition Development Kit v.17 (JDK 17).

  https://www.oracle.com/technetwork/java/javase/downloads/index.html

- Install a decent IDE, e.g. Eclipse, which is the most popular IDE for Java Development.

  https://www.eclipse.org/downloads/packages

- Setting your OS environment PATH to point to the latest JDK you have installed.

  ```
  java -version
  ```

- Setting your OS environment CLASSPATH to the Java "bin" folder. Otherwise, you might get following error:
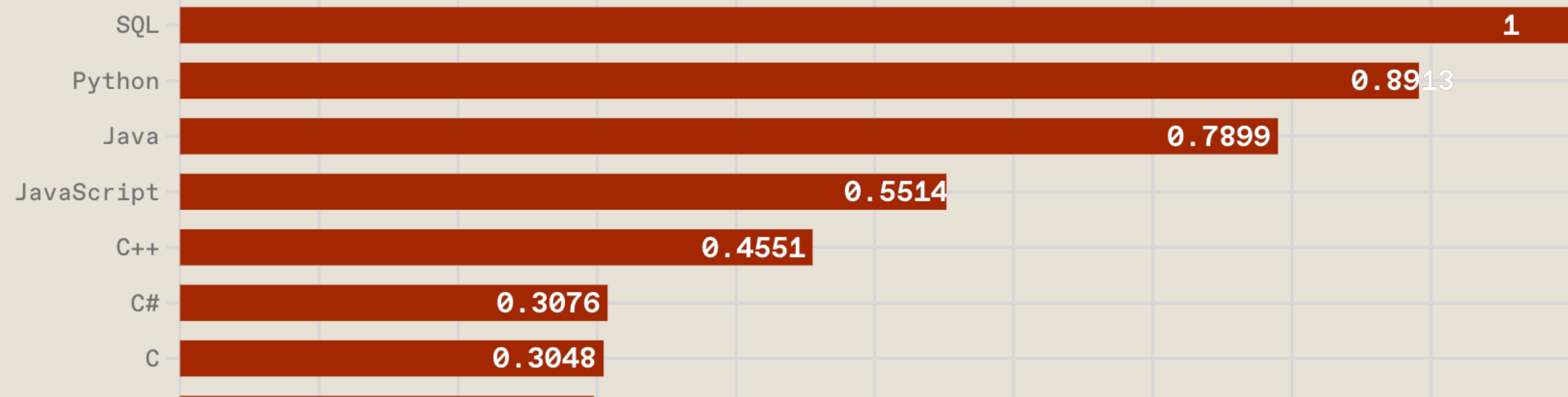
  ```
  Exception in thread "main"
  java.lang.NoClassDefFoundError: <Your class name>
  ```

- Setting your OS environment JAVA_HOME to the JDK path.

Top Programming Languages 2023

Click a button to see a differently weighted ranking

| Spectrum | **Jobs** | Trending |

Language	Value
SQL	1
Python	0.8913
Java	0.7899
JavaScript	0.5514
C++	0.4551
C#	0.3076
C	0.3048

Course Syllabus

- **Session1: Object Oriented Concepts**

- **Session 2: Exceptions, I/O and File Management**

- **Session 3: Collections and Generics**

- **Session 4: Storage and Retrieval: Memory, Search and Indexing**

- **Session 5: Concurrency**

- **Session 6: Batch/Stream Processing, Asynchronous Messaging**

Course Syllabus

- **Session1: Object Oriented Concepts**

- **Session 2: Exceptions, I/O and File Management**

- **Session 3: Col**̲ ̲**ics**

- **Session 4: Sto**̲ ̲**Memory, Search and Inc**̲

This is approximate plan and it is subject to change.

- **Session 5: Concurrency**

- **Session 6: Batch/Stream Processing, Asynchronous Messaging**

We do not teach any Java based GUI in this Course

Java Swing: https://www.indeed.com/jobs?
q=java+swing&l=Boston%2C+MA&vjk=c6dbbfe85a81851c

Java FX: https://www.indeed.com/jobs?
q=java+FX&l=Boston%2C+MA&vjk=d93ee642a0f7d927

Java Applet: https://www.indeed.com/jobs?
q=java+Applet&l=Boston%2C+MA&vjk=a3b5324b06dc7826

Evaluation 1/3 (Homework)

- Your homework grade will be calculated based on following criteria

  1. Does the code compile. If not, you can not get its mark.

  2. Does it performs all tasks that has been asked in the assignment.

  3. Is the code readable, did you put enough comments, respecting java naming conventions, etc.

  4. Does it include a descriptive *read.me* file.

  5. Are you able to explain your code and answer my questions about this. We do not tolerate cheating at all cost.

  6. **You need to submit at 3-10 minutes presentation of your homework and describe your code, what you have done. Every time, we will review it in the class and discuss it.**

Evaluation 2/3 (Homework)

- Any delay on assignment submission will result in grade deduction, 10% per day. After three days later the assignment will not get accepted at all.

- If there is an extreme circumstances such as getting sick or death of relatives, you can communicate with us about the late assignment. However, I would not accept anything without proper evidence.

- **Facilitators** in this course and he will help you in your homework and grading.

- We do not accept any late homework submission three weeks before the end of semester.

Evaluation 3/3 (Final Exam)

- You have a final written exam.

- You need to take pictures and upload some diagrams you draw on the paper and upload while you are taking the final exam. Protectors will allow you to use your camera and take a picture from the paper.

- All materials of the final exam, comes from slides. Therefore, you do not need to purchase any extra book.

- Studying <u>slides</u> for final exam is enough.

- Teaching modules which are available online, are auxiliary material if you like to learn more, I do not use them in this course.

Grading Policy (8/8)

- (1) Homeworks: 50%

- (2) Final Exam: 50%

A	95-100
A-	90-94.99
B+	85-89.99
B	80-84.99
B-	75-79.99
C+	70-74.99
C	65-69.99
F	<65

My ultimate goal in this course

1. Improve your qualification for the job market by getting familiar to state-of-the-art tools and techniques in Java and professional development environment.

2. I would like to motivate you work hard and get some interesting qualifications, while NOT putting you under unnecessary stress. <u>We do not have quiz in the class</u>.

3. This class is very interactive, we will do lots of programming together inside the class and your active participation is very important.

Please turn on your camera

Teacher : Open your mics or cams !

Students : We don't have mics !

Also students :

Communication Policy

- Please send email about your assignments to Facilitators.

- While sending me an email in the header please specify: [CS622 O1]

- I do appreciate be precise and short in your email. I do receive daily >30 emails and I should delete most of them without reading them.

About Me

- Reza Rawassizadeh

- Email: rezar@bu.edu. Please include the [MET CS622 O1] at the beginning of the email title.

- Office Address: 1010 Commonwealth Ave. 3rd Floor Room 320.

- Web page: http://www.bu.edu/csmet/profile/reza-rawsasizadeh/

- My Research: https://scholar.google.com/citations?user=MlmVx_UAAAAJ&hl=en

Facilitators

- Warren Mansour: mansur@bu.edu

- Gabriel Edward Pinnell: gpinn94@bu.edu

- Ed Osrini: edorsini@bu.edu
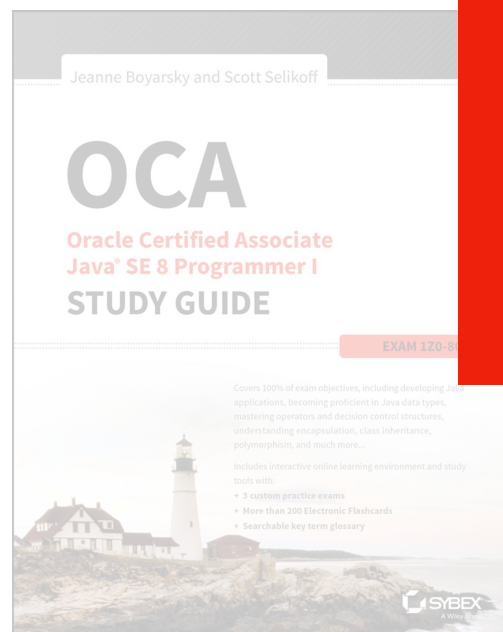
- Anthony Lucarelli: tonyluc@bu.edu

Books and References
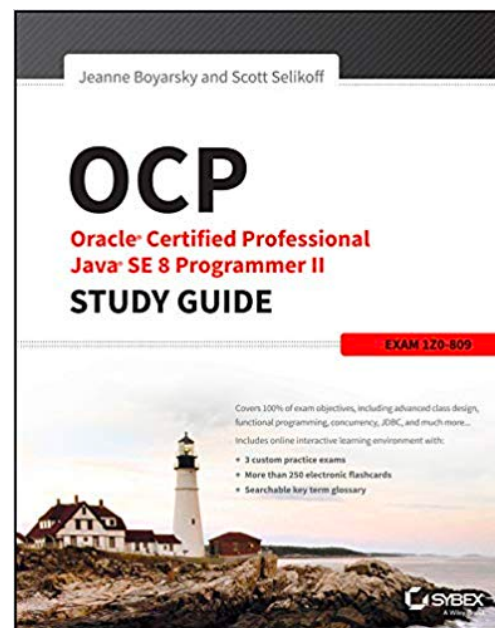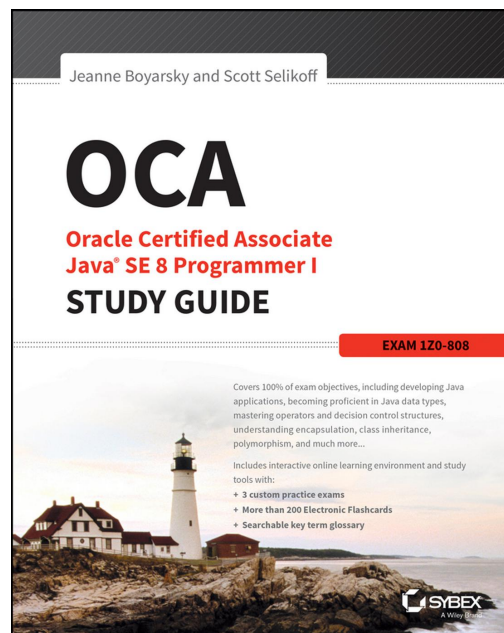
+ Lots of online tutorials and examples.

Books and References

You don't need to purchase these books, and class SLIDES + final projects and HWs are enough to guarantee you the best grade

OCA
Oracle Certified Associate
Java SE 8 Programmer I
STUDY GUIDE

Jeanne Boyarsky and Scott Selikoff

Designing Data-Intensive Applications

Martin Kleppmann

+ Lots of online tutorials and examples.