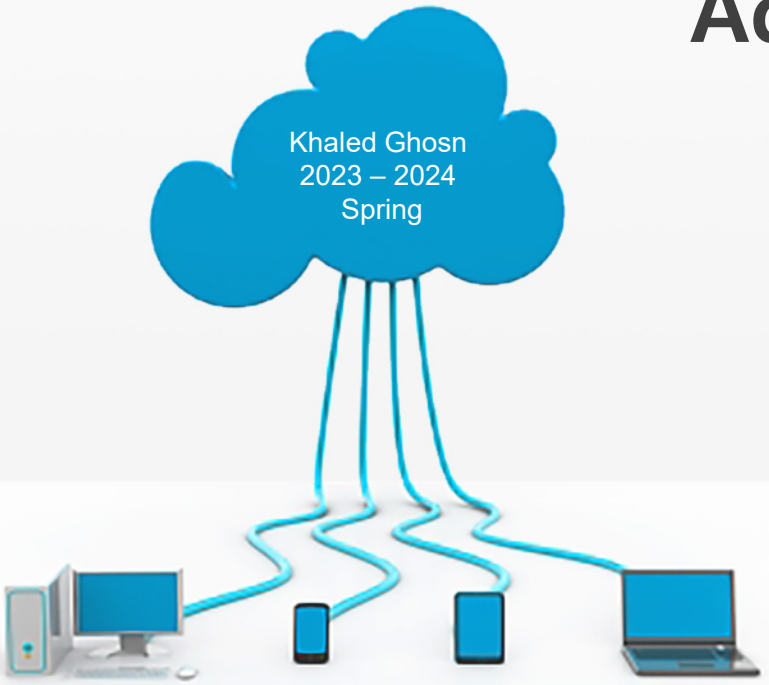
ARTS, SCIENCES & TECHNOLOGY UNIVERSITY IN LEBANON

AUL

CSC320 & CCE417

Advanced Programming using Java



Khaled Ghosn
2023 – 2024
Spring

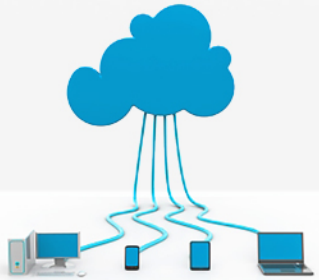
Introduction

Course Description

Welcome to the "**Advanced Programming** using java" course.

Based on OOP (P II course), this course presents how to write a more interactive programs, with the following features:

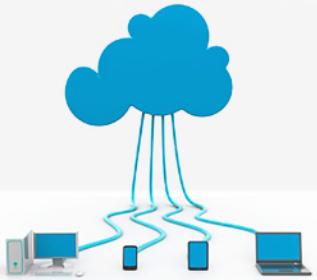
- Rich with graphical user interfaces through which users can interact with the system
- Able to handle exceptions for all possible errors
- Stores and retrieves data



Course Description

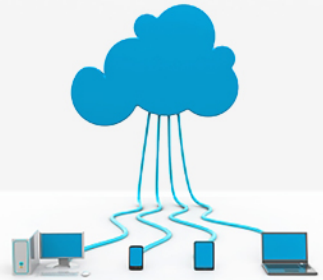
Goals:

- Identify GUI components and indicate their use cases
- Describe events associated by several types of classes
- Create desktop applications with rich and interactive graphical user interfaces
- List, differentiate, and construct several types of exceptions
- Describe and produce text and binary files to store and retrieve data
- Identify and describe the differences between serial access and random access files and their usages in various applications
- Create connection between java program and different DBMSs and exploit the connection to retrieve and store data efficiently

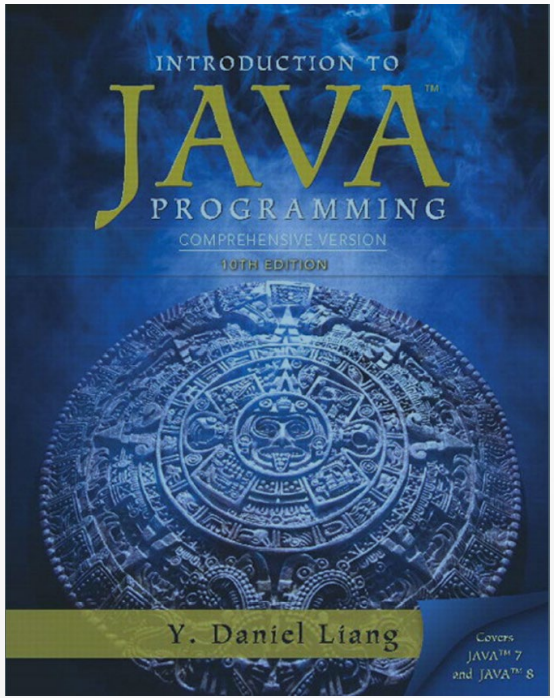


Course Outline

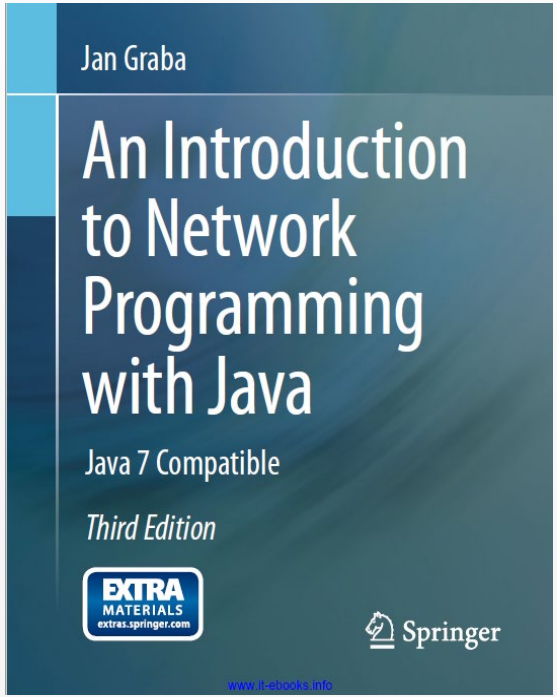
1. Course overview
2. GUI using JavaFX, Swing, and AWT packages
3. JavaFX components
4. JavaFX handling events
5. JavaFX animations
6. Exception handling
7. Files (Serial, Random Access)
8. Java Database Connectivity



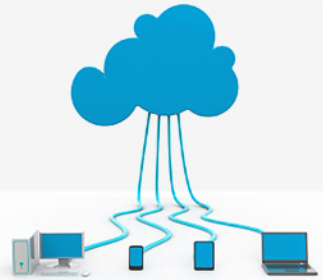
Textbook



INTRODUCTION TO JAVA PROGRAMMING
COMPREHENSIVE VERSION
Tenth Edition

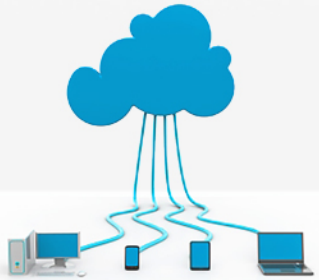


An Introduction to Network Programming with Java
Java 7 Compatible
Third Edition



Grade Distribution

Attendance	5 %
Week 3 Evaluation	3 %
Week 5 Evaluation	5 %
Week 7 Evaluation	6 %
Midterm	20%
Week 10 Evaluation	7 %
Week 12 Evaluation	7 %
Week 14 Evaluation	7 %
Final Exam	40 %



JAVA

You will be using the **Java** programming language in this course

This course does not teach Java programming

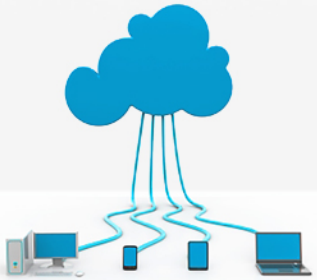
- You will use Java to demonstrate your knowledge in this course

One lecture covers

- Revision about Classes using Java

Commenting code is necessary for engineers:

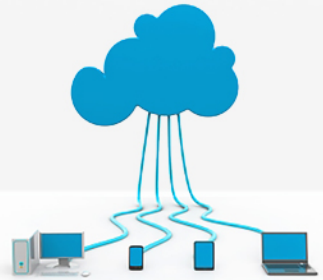
- Engineers who do not comment code will not encourage employees and contracted programmers to comment their code
- This will lead to significant additional costs



JAVA

WHY WE LOVE IT

- Versatility (e.g. able to adapt)
- Object-oriented programming
  (paradigm based on the concept of "objects")
- Great place to start
- Excellent online documentation
- Easy to teach & easy to learn
- Widely used



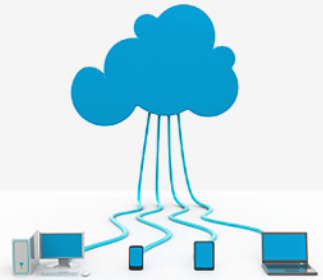
JAVA

Make sure you already have all the needed development tools:

- Java Development Kit (JDK) for Java Standard Edition (SE)
- An Integrated Development Environment (IDE) such as NetBeans or Eclipse
- A java-fx plugin is integrated with your IDE

Get familiar with the IDE basic tasks:

- project creation
- basic file and package manipulation
- code editing and completion
- most used keyboard shortcuts
- running and debugging your code.



JAVA

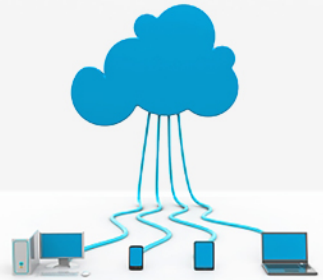
Revision

basic java principles

variables, conditions, loops (iterations), arrays, functions ...

OOP:

- classes vs objects
- constructors
- encapsulation
- overloading
- inheritance
- overriding
- interfaces
- abstract classes
- polymorphism



JAVA

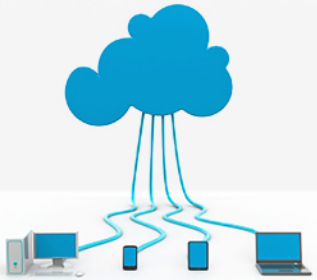
ENVIRONMENT SETUP - JDK

- Download Java Development Kit 8 for your corresponding OS.

https://www.oracle.com/java/technologies/javase/javase-jdk8-downloads.html

- JDK includes a runtime environment but JRE doesn't.

- To verify that java is correctly installed, go to Start > cmd.exe and run "java –version"



JAVA

ENVIRONMENT SETUP - JDK

NETBEANS

1. Download the latest version of NetBeans.
2. In order to get the IDE up and running with JavaFX, please follow step-by-step what is mentioned in the corresponding YouTube video.
3. In NetBeans, create a New Project, select "Java With Ant", then "JavaFX", and choose JavaFX Application. Rename your project and press Finish.

https://netbeans.org/

https://www.youtube.com/watch?v=UlobR93nJow

ECLIPSE

1. Download the latest version of Eclipse IDE.
2. In order to get the IDE up and running with JavaFX, please follow step-by-step what is mentioned in the corresponding YouTube video.
3. In Eclipse, create a New Project, select JavaFX project, rename it and press Finish.

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

https://www.eclipse.org/efxclipse/install.html

https://gluonhq.com/products/javafx/

https://www.youtube.com/watch?v=bC4XB6JAaoU

Rules

Improving Your Performance

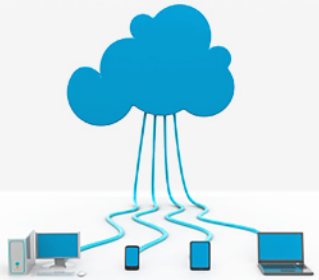
The human brain can retain approximately 5-9 independent items of information in its short-term memory

> George Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information*, Psychological Review, Vol.63 pp.81–97, 1956

The introduction of new information causes the brain to discard an item currently in your short-term memory

- For example, consider the 12 words which will appear on the next sequence of screens

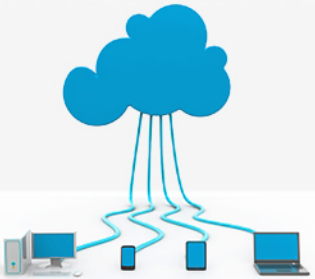
To transfer information from your short-term memory to your long- term memory, that information must be imposed on your mind at least three times



Rules

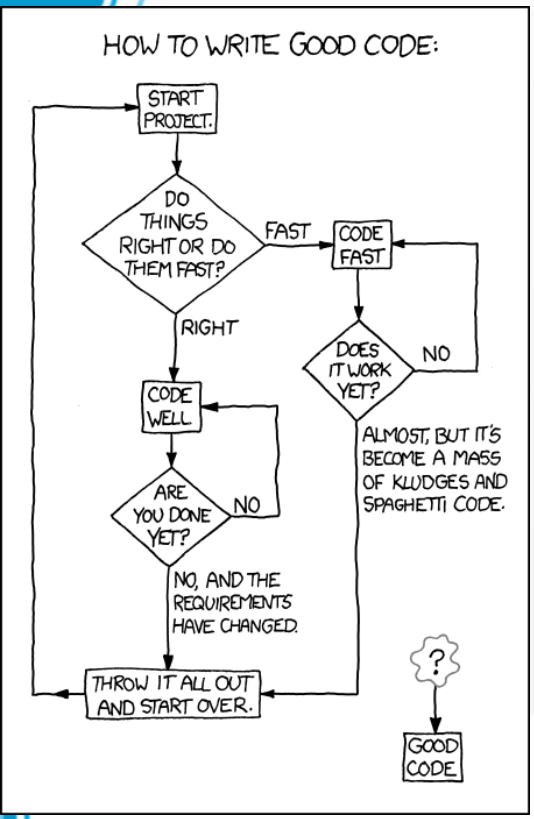
WORKLOAD & RULES

- Course consists of 42 hours, i.e. 14 weeks - 28 (1.5 hr.) sessions
- Each session requires 2 to 6 hours of work:
- Revising concepts covered in class
- Practicing exercises solved in class
- Homework solving (if any)
- Your presence in class is extremely important, not just for attendance
- Assignments should be solved individually; plagiarism will not be tolerate, a deduction of grades will be applied for BOTH parties involved
- Send formal emails! Otherwise, will be ignored!
  - put in the e-mail subject: [AP]
  - example: [AP] homework1



Rules

Improving Your Performance



You should always try the following:

- Look at the slides before class
- Attend lectures
  - You see the information again with commentary
- Review the lecture during the evening
  - Rewrite and summarize the slides in **your** words

In addition to this, you should:

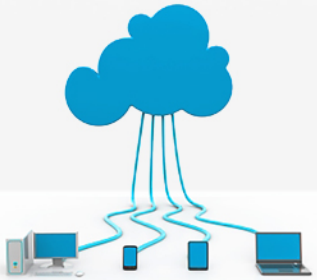
- Get a reasonable nights sleep (apparently this is when information is transferred to your long-term memory), and
- Eat a good breakfast (also apparently good for the memory)

Rules

Plagiarism

All assignments must be done individually:

- You may not copy code directly from any other source
- Plagiarism detection software will be used on all of the assignments
- If you viewed another code (from books or lecture notes), you must include a reference in your assignments
- You may not share code with any other students by transmitting completed functions to your peers
- You may discuss assignments together and help another student debug his or her code; however, you cannot dictate or give the exact solution
- When one student copies from another student, both students are responsible (exceptions are made for outright theft)



Rules

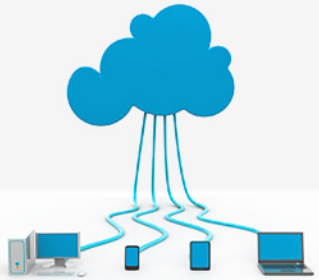
Plagiarism

All assignments must be done individually:

- The penalty for plagiarism on an assignment is a mark of 0
- Regardless if Projects are counted or not
- A student who cheats must receive a grade lower than a student who did not hand in a project

The best way to avoid plagiarism is:

- review the course Programming 2
- read the assignments as soon as they are available
- start the assignment so that there is sufficient time to contact me if you have difficulty
- do not give your code to anyone



Instructor Contact

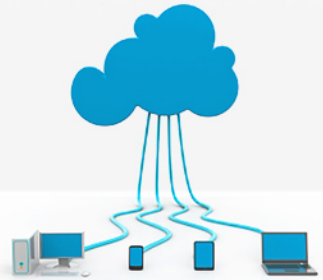
Assignments can be sent by e-mails via **Google Classroom**; otherwise will be ignored!

Facebook & **WhatsApp** are never accepted for sending assignments, otherwise you are welcome to contact for any assistant.

Do not hesitate to contact me for any assistance through the e-mail:

KhaledGhosn@Hotmail.com

kg002@live.aul.edu.lb

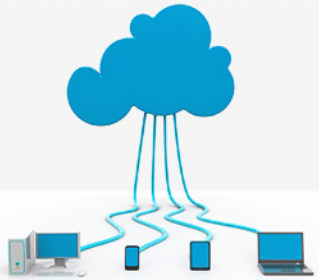


Usage Notes

These slides are made publicly available for anyone to use

If you choose to use them, or a part thereof, I ask only three things:

- that you inform me that you are using the slides,
- that you acknowledge my work, and
- that you alert me of any mistakes which I made or changes which you make, and allow me the option of incorporating such changes (with an acknowledgment) in my set of slides



Sincerely,
Ghosn Khaled
KhaledGhosn@Hotmail.com