

Homework 2: Data Structures

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Part A

Question A.1 – Waterfall Program Development

- (1) **Problem Analysis:** The goal was to create a robust program that simulates simple operations of a Bank ATM machine that handles all sorts of errors that may occur from the user's inputs or other inputs.
- (2) **Requirement Specifications:** The ATM should be able to open new accounts, on which the user can login/logout, deposit or withdraw money, check the balance, and to create a text file with all the accounts and their info and being able to save to read from that text file so the accounts are saved when the ATM terminates.
- (3) **Architectural Design:** The design of the program is made of an Account class and ATM class (containing the main method), on which all the user's accounts were instances of the Account class along with its methods (deposit, withdraw, check balance), and the ATM class which would store all the accounts in an Account type ArrayList and storing them on a .txt file when program terminated putting all the accounts again on the ArrayList once the ATM turns on again.
- (4) **Implementation:** This phase consists of implementing the design described above in actual Java code.
- (5) **Testing and Verification:** This phase consisted of trying different types of user inputs and catching the errors that might occur and finding a way in which the ATM still runs and requires further correct user inputs.
- (6) **Delivery:** This phase consists of the submitting of the assignment.
- (7) **Operation:** This phase is basically the running of the program by the professor to check the assignment.
- (8) **Maintenance:** For this phase I corrected any type of errors that I didn't catch during my Testing and Verification phase and adding other functionalities desired by the user which are described in homework 2.

Question A.2 – Signatures

- (a) The parameter args (command line arguments) token is not fixed. The reasons to exploit this possibility is for "fixing", "personalizing", or "specializing" the program so it can run a certain way or provide it with some piece of information it needs.
- (b) NO, this program won't compile because it has two methods that have the same signature which would result in overloading error.
- (c) Signature of the method is: mystery (double[], Account, int).

Question A.3 – Terminals

(a)

```
Klevis@Klevis-PC ~
$ echo My name is Klevis Tefa
My name is Klevis Tefa

Klevis@Klevis-PC ~
$ cd /cygdrive/c/Users/Klevis/Desktop/Junior\ Year/

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ mkdir TestFile

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ ls
'Data Structures' 'Fall '\ '16 books' 'Intro to Math Modeling' TestFile

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ alias

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ alias p="pwd"

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ p
/cygdrive/c/Users/Klevis/Desktop/Junior Year

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ pwd
/cygdrive/c/Users/Klevis/Desktop/Junior Year

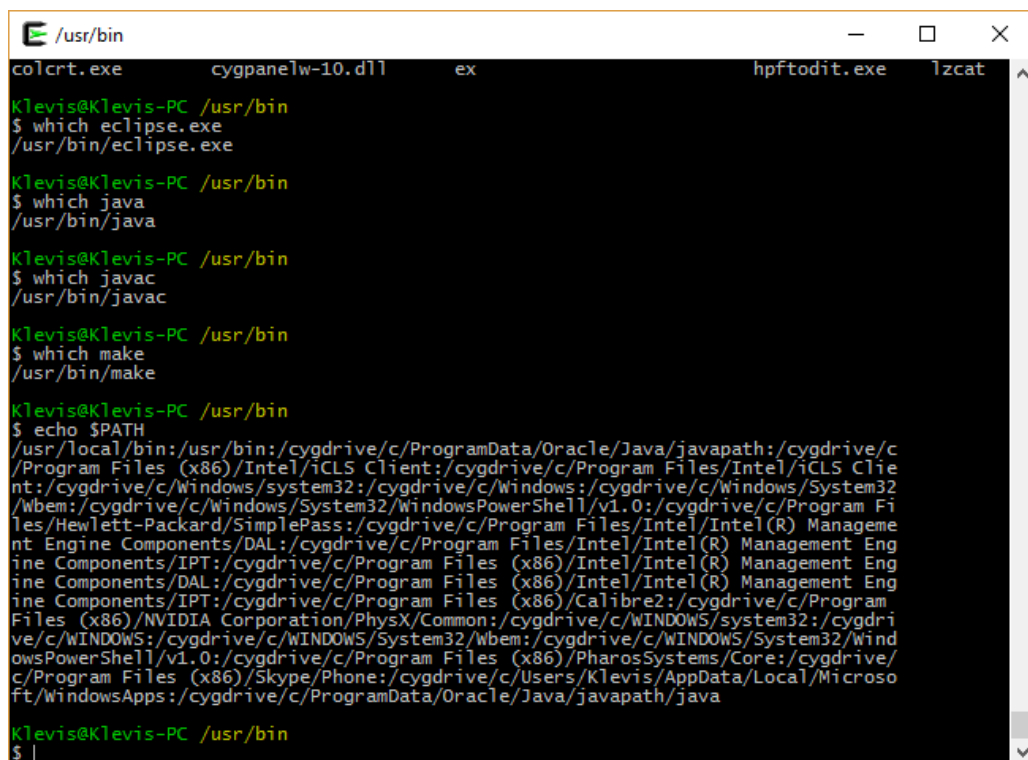
Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ rm -r TestFile

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ ls
'Data Structures' 'Fall '\ '16 books' 'Intro to Math Modeling'

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ uname
CYGWIN_NT-10.0

Klevis@Klevis-PC /cygdrive/c/Users/Klevis/Desktop/Junior Year
$ |
```

- (b) The significance of \$PATH variable in shell programs is that it is a variable that shows to the shell the directories on which the shell should search for .exe files depending on the user's commands.



```
/usr/bin
colcrt.exe  cygpanelw-10.dll  ex  hpftodit.exe  lzcat

Klevis@Klevis-PC /usr/bin
$ which eclipse.exe
/usr/bin/eclipse.exe

Klevis@Klevis-PC /usr/bin
$ which java
/usr/bin/java

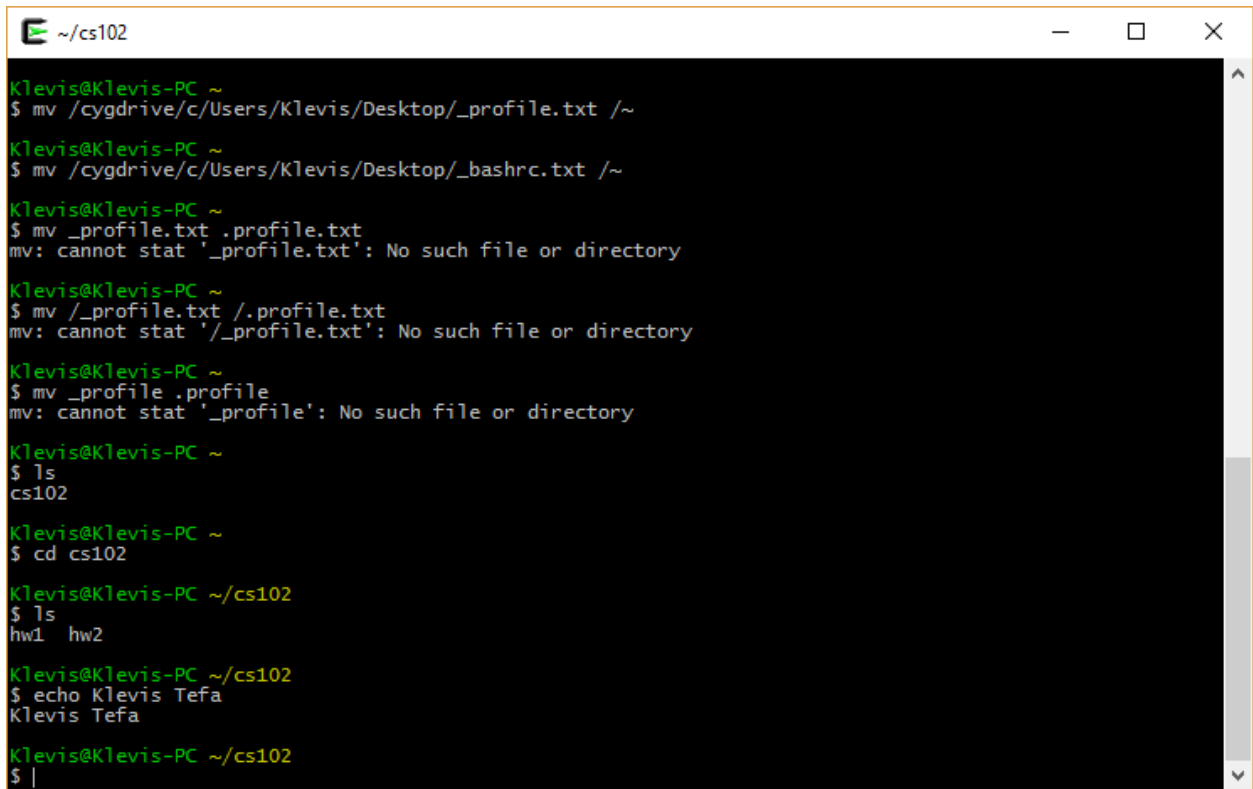
Klevis@Klevis-PC /usr/bin
$ which javac
/usr/bin/javac

Klevis@Klevis-PC /usr/bin
$ which make
/usr/bin/make

Klevis@Klevis-PC /usr/bin
$ echo $PATH
/usr/local/bin:/usr/bin:/cygdrive/c/ProgramData/Oracle/Java/javapath:/cygdrive/c/Program Files (x86)/Intel/iCLS Client:/cygdrive/c/Program Files/Intel/iCLS Client:/cygdrive/c/Windows/system32:/cygdrive/c/Windows:/cygdrive/c/Windows/System32/Wbem:/cygdrive/c/Windows/System32/WindowsPowerShell/v1.0:/cygdrive/c/Program Files/Hewlett-Packard/SimplePass:/cygdrive/c/Program Files/Intel/Intel(R) Management Engine Components/DAL:/cygdrive/c/Program Files/Intel/Intel(R) Management Engine Components/IPT:/cygdrive/c/Program Files (x86)/Intel/Intel(R) Management Engine Components/DAL:/cygdrive/c/Program Files (x86)/Intel/Intel(R) Management Engine Components/IPT:/cygdrive/c/Program Files (x86)/Calibre2:/cygdrive/c/Program Files (x86)/NVIDIA Corporation/PhysX/Common:/cygdrive/c/WINDOWS/system32:/cygdrive/c/WINDOWS:/cygdrive/c/WINDOWS/System32/Wbem:/cygdrive/c/WINDOWS/System32/WindowsPowerShell/v1.0:/cygdrive/c/Program Files (x86)/PharosSystems/Core:/cygdrive/c/Program Files (x86)/Skype/Phone:/cygdrive/c/Users/Klevis/AppData/Local/Microsoft/WindowsApps:/cygdrive/c/ProgramData/Oracle/Java/javapath/java

Klevis@Klevis-PC /usr/bin
$ |
```

(c)



```
~/cs102
Klevis@Klevis-PC ~
$ mv /cygdrive/c/Users/Klevis/Desktop/_profile.txt ~/
Klevis@Klevis-PC ~
$ mv /cygdrive/c/Users/Klevis/Desktop/_bashrc.txt ~/
Klevis@Klevis-PC ~
$ mv _profile.txt .profile.txt
mv: cannot stat '_profile.txt': No such file or directory
Klevis@Klevis-PC ~
$ mv /_profile.txt /.profile.txt
mv: cannot stat '/_profile.txt': No such file or directory
Klevis@Klevis-PC ~
$ mv _profile .profile
mv: cannot stat '_profile': No such file or directory
Klevis@Klevis-PC ~
$ ls
cs102
Klevis@Klevis-PC ~
$ cd cs102
Klevis@Klevis-PC ~/cs102
$ ls
hw1  hw2
Klevis@Klevis-PC ~/cs102
$ echo Klevis Tefa
Klevis Tefa
Klevis@Klevis-PC ~/cs102
$ |
```