IB Computer Science Student_____

Collections

Date: _____

Collections Lab Version 2

Lesson summary from versions 1

Using java applets for teaching isn't a great plan. The browsers we use the most will not run them and they will not run at all on many platforms. The applet could still be modified and compiled but testing could be a chore.

Lesson Description for versions 2

The StudyWord applet has been changed to a normal Java application. Unlike most of the Java applications we have written this will continue to use a Graphical User Interface that has the same basic format as the applet from version 1. Everyone will be provided with an environment where the program can be modified, compiled, and run.

Directions

Lab Setup

1. Insert the USB drive that has been provided into a Windows computer
2. Open a Windows command prompt
3. Change drives to the USB drive, Probably the D; drive, by typing the command `D:`
4. Set up the java environment by running the batch file set-d.bat [type in `set-d]` if the USB drive is attached as drive E: then run `set-e`.
5. Test that your environment has been set up correctly by compiling the StudyWords.java program buy running: javac StudyWords.java
6. Test that your environment has been set up correctly by running the StudyWords.java program buy running: java StudyWords
7. Test the program by opening one of the vocabulary files that can be found in on the USB drive in the `vocab` subdirectory. Flip through a few terms, then close the StudyWords application.

Review the program changes from when StudyWords was an applet.

1. Open the StudyWords.java program with Notepad or Wordpad
2. Unlike the applet, the application does require the use of a `main (`
3. The structure of the Word class has not changed
4. The init() function that would be automatically called when the applet was run is now being called from the StudyWords constructor, which will be called from `main ()` when a `StudyWords` object is created.
5. `The main ()` makes the program runnable in a window.
6. Review method `init()`. A new form element was added, the JFrame. All of the form elements are created and then attached to the JFrame object named frame.

Continue with the objectives from Collections Lab version 1

- Review the definition of the HashSet<Word> set declaration and the structure of the Word class.
- Open one of the text files from the vocab directory on the USB drive Notepad or another text editor.
- Trace the actions of the load(HashSet set, File inputFile) method using the input file and tracing the contents of set collection.

IB Computer Science

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Collections

Date: _____

- Trace the actions of a call to gotoEl(4); This is a standard way to traverse through a collection. What exactly does gotoEl do? Write your answer in the box below.

- Trace the declaration and use of the variable txtDef . List below the properties and methods that are associated with txtDef that are demonstrated with this applet.

- Change the size of the label that contains 'Definition" so that it shows up completely on the screen. Compile and test your changes.
- Complete Assignments 1 and 2 [next pages].

IB Computer Science

Student_____

Collections

Date: _____

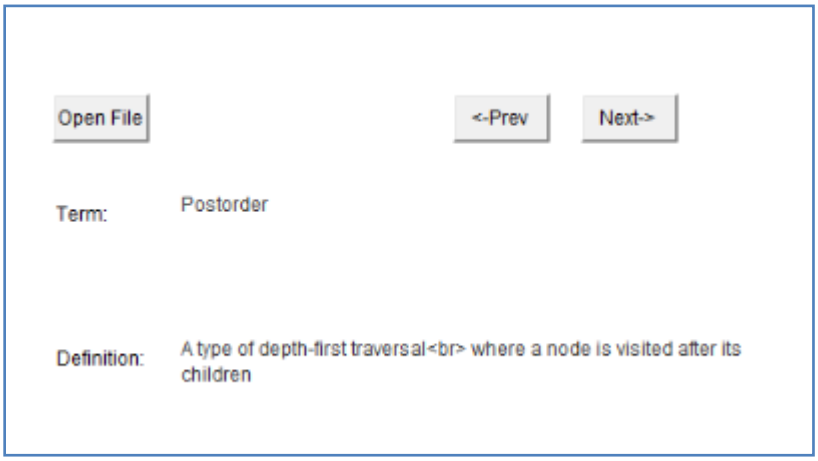
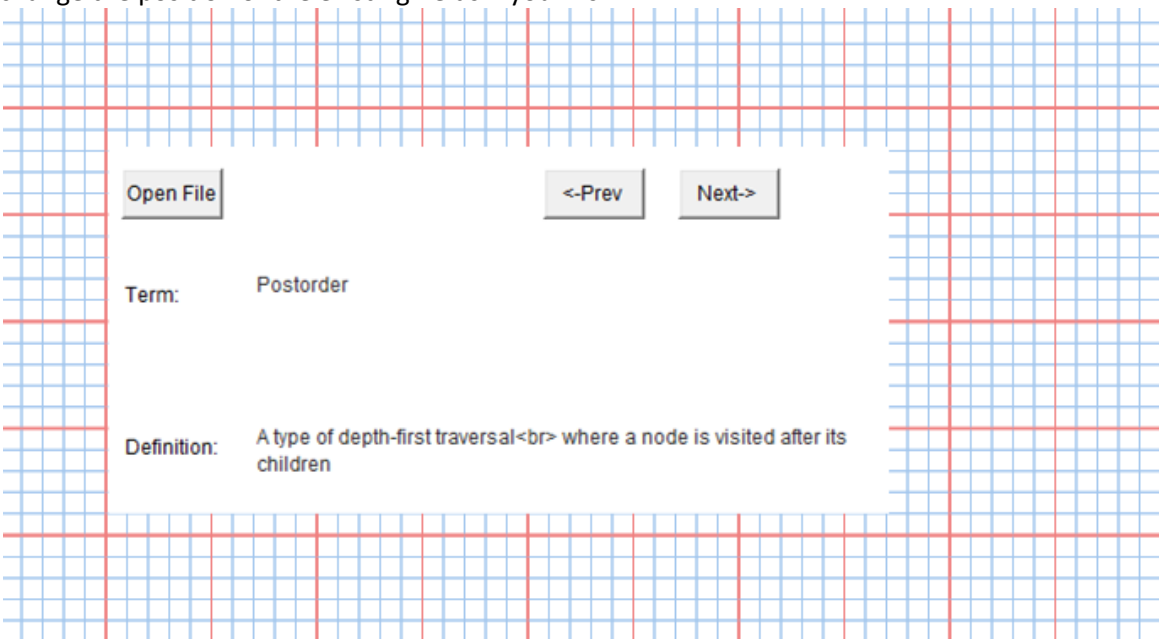


Figure 1. StudyWords Main Screen

Assignment 1: Trace the use of the variable `current` inside the StudyWords.java program.
It is used like an index into the `Hashset<Word> set` collection. It gets set to zero and is updated when the user hits the [<-Prev] or [Next->] buttons.
Create three or four new fields on the screen to let the user know what record is being displayed and how many records (term/definitions) are in the collection. For example:

Record 5 of 10
[Showing term] [term#] [of] [number of terms in the collection]

Although the use of `current` begins with 0, the display should begin with one (1).
Use the properties and/or methods available to collections wherever you can.
You can use the diagram below to help you plan the new fields. You can of course change the position of the existing fields if you wish.



IB Computer Science

Student_____

Collections

Date: _____

Assignment 2: In the space below, describe some of the enhancements that could be made to this program to make it more useful for a study and review aid.