CS 520: Object-Oriented Programming
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Homework: Project Proposal
(Due Day: November 9, 2009 @ 16:00)
Team Name: Green Team
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Context of the Project: A graphical representation in Smalltalk of the PDA (Pushdown Automata)

We are thinking to implement a project, a graphical representation in Smalltalk of the PDA (Pushdown Automata) using Pharo development environment. The purpose of the project is to give a good understanding how the Pushdown Automata works. A Montocello version will be on the squeaksource.com.

The project will have the following *phases*:

1. Create the object design
     o The representation of language
     o Possible objects on the project
     o Implement the structure design chose
2. Create the User Interface
3. Create the animation of states transition based on the input string.

User Interface *Stories*:

The user interface will be visualized with a menu option to choose a language, an empty stack, and a representation of the states according to the language choice of the user. Few language objects are specified by the authors of the application during implementation phase. Creation of new languages by the users is not allowed but the application will be scalable to achieve this functionality.

Typical sequence of steps:

1. The user selects a language from the drop down menu and presses view button. Then the state diagram is constructed in an animated fashion (at first the states will appear, then the transitions)
2. The user will choose a language from a drop down menu to determine if the input string will be accepted or not.
3. The user will enter the input string in an input text area and starts the PDA.
4. The user will press a button to visualize the transitions of the PDA and the updating of the stack. If there are more than one transitions then set of states are highlighted in the state diagram.
5. At the end of parsing the input string, the PDA will report the acceptance of the string in a colored fashion.

6. The application is then reset using a reset button.

User Interface

L1, L2, ...L 3

Stack Operations:
– pop, push, replace,
no change

Machine States

Input String

Top

$

Stack

Next

reset