Simulation Proposal

Proposed Course Title:
Java Programming I: Learning to Build Object-Oriented Programs with Java

Course Description:
This course is offered at the higher education level to provide a basic introduction to creating object-oriented programs utilizing the java language. The course provides a collection of information ranging from the creation of flowcharts in the design phase to creating console applications and applets using java.

Course Justification:
This course is offered as part of the information technology curriculum within community college programs. Students’ are required to complete at least six credits in the programming area in order to graduate with an associate’s degree in information technology. Java is a commonly utilized language in today’s programming careers. Therefore, this course is a highly recommended for those completing information technology degrees to partake in and learn the concepts of the language.

Target Audience:
This course is designed for those who are participating in community college level courses. The primary participants are students who are partaking in the information technology curriculum, but it is not limited to students only in that track. Other community college students may sign up for the course as long as they have the basic computer knowledge which can be gotten by taking part in an introductory computer concepts course. Others who are currently practicing in the information technology field may choose to take the course to learn the language for their careers as a non-degree seeking student.

Description of the Simulation

Type of Simulation:
This simulation is considered diagnostic in nature. The participants are given a document by the controller describing the provisions needed in the java program. Then, they must complete sequential steps for the creation of the programs, as well as request other needed information and get approval from the controller, which is the vice president of the company contracting them to create the programs.

Scope of Simulation:
The simulation will cover many basic concepts which were learned throughout the semester in the course related to the java programming language. They will be building graphical flowcharts to display the flow of the program, as well as they will demonstrate the ability to build basic programs which receive input and provide output. The participants will also have to demonstrate their problem solving skills over the process of building programs by debugging any compilation problems or design issues which may arise.
Learning Objectives Supported by the Simulation:
The following are learning objectives which will be covered in the final assessment simulation:

- Generate a graphical flowchart illustrating the step-by-step flow of the program using Microsoft Word.
- Construct a console application using the textpad software which compiles and runs successfully based on the provided requirements document.
- Create a storyboard illustrating the graphical appearance of how the applet program will look using Microsoft Word.
- Construct a web-based applet using the textpad software which compiles and runs successfully based on the provided requirements document.
- Diagnose any coding problems within the program which arise during compilation so the program will compile and run correctly.

Framework

Problem/Scenario:
The participant teams will be acting as IT programming consultants who own their own company. The vice president of an outside company will present them with a requirements document requesting a program which is needed for that company. The participants will be required to go through the programming cycle to create a console application and a web driven applet based on the requirements document which they have been given.

Participant Roles:
Participants are the students enrolled in a Java programming course. They are paired into groups of two who are acting as a team of Java programmers owning their own consultant company. They have been consulted to create a program for a business in need of a new application.

Staff and Peripheral Roles:
The staff role would be based on who the instructor of the course is. The instructor of the course will be acting as the vice president of the company requesting the creation of the application. The vice president will give them the go ahead to advance to other steps of the programming phases as needed. At the close of the simulation the instructor still acting as the vice president will observe the participants presenting their final products and provide them with a final assessment grade on the program which was created during the simulation.

Anticipated Events:
The requirements document will be provided to the participants at the start of the simulation. The participants will have to request any other information they feel they need to start the design phase of the programming cycle. As they move forward in the simulation, they will create a flowchart. Once the flowchart is completed, they will meet with the Vice President to be sure their ideas about the program mirror one another. Once that is agreed upon, the participants are ready to begin the coding process. As the participants generate the code, they will be debugging the programs and reviewing the code until it compiles correctly and provides correct output. This portion of the simulation may be time consuming being that debugging can
be a lengthy process depending on the number of errors. There will be times during the simulation where the participants may request or need to meet back with the Vice President of the company to be sure their products are approved by the company who contracted them.

**Projected Sequence:**

The sequence of events will begin once the participants have received their requirements document from the vice president of the company. Once received, they will read over the document and be sure they have all information for the application. Next, they will build a graphical flowchart which displays all of the functions which will exist within the program. Once the flowchart is adequate, the participants will begin coding the console application. After the code compiles correctly and produces accurate output, they will create a storyboard showing the layout for the applet program. Once the storyboard meets the proper specifications, they will begin coding the applet program. After the applet complies successfully and produces accurate information, they will finish with the coding portion of the simulation. Participants must then print out all documentation which has taken place over the programming cycle ranging from the flowchart to the final source code for each program. The participants will then be required to present their final products to the vice president on the company requesting their services. They will be assessed on the simulation during this presentation.

**Consequences:**

The consequences of the simulation are dependent upon how well the participants perform during the programming process. The participants must complete each portion of the simulation satisfactorily from the design phase to the demonstration of the programs. A letter grade will be awarded to them for their final assessment project in the java programming course. The final project assessment simulation counts as thirty percent of their overall course grade. If the performance levels are low, it can result in a lower course grade which in turn will affect their overall curricular GPA. If their performance is at an extremely low level, it can result in the participant having to repeat the entire course as a requirement for the completion of their information technology degree.

**Resources:**

The following are resources needed for the simulation:

- Classroom for prep and presentation
- Computers for each participant and instructor
- Java Textbooks
- USB drives for each participant
- Textpad software on each computer
- Internet access on each computer
- Microsoft Word for each computer
- Projector/Projector screen