Alice Programming with SPARCS

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Introduction

Alice Programming Environment
Alice is a drag-and-drop programming environment created and provided by Carnegie Mellon University. Alice targets young students and provides an interactive drag-and-drop approach to object-oriented programming. There were a total of two Alice sessions. The first focused on designing and writing programs while the second focused on control structures.

Alice and SPARCS
Alice is one of many sessions in the SPACS middle school outreach project. The aim of SPARCS is to introduce computer science topics to middle school students. Alice introduces the students to object-oriented programming and storyboarding with the hope of increasing interest in computer science.

Alice Programming
The first of two Alice sessions focused on introducing the steps of programming to the students. During this session, students learned:

- how to use the Alice programming environment
- object-oriented programming basics, such as objects, classes, methods, and properties
- how to create a storyboard for planning a program and the importance of writing down their ideas and creating a plan before starting to program on the computer

Alice Control Structures
The second of the two Alice sessions focused on control structures. The students programmed two games in Alice to show them that control structures allow for interactive and flexible programming.

The control structures that the students learned were:

- Conditional Statements
- Loops
- Event Handling
- Functions

Conclusions

Some of the significant learning outcomes from these sessions include:

- Students prefer and benefit more from hands-on activities
- Students tend to favor Alice programs where they can control objects using the keyboard.
- Inheritance was not clearly understood or even evident in Alice to the students.

Future Work

The next sessions involving Alice will be adapted to better explain and portray more advanced object-oriented programming techniques.