

From Alice to Java

Norbert Győrbíró
University of Aizu

Introduction

- Alice as a stepping stone to high-level programming languages
- Course in preparation
- Reference:
John Lewis, Peter DePasquale: Alice & Java

Transitioning to Java - What's known?

- Assignment, equality, relational, and logical operators.
- Control statements for decisions and repetition.
- Text output using the print statement.
- Lists and arrays.
- Events, user interaction (KeyListener in SMS).

Transitioning to Java - What's new?

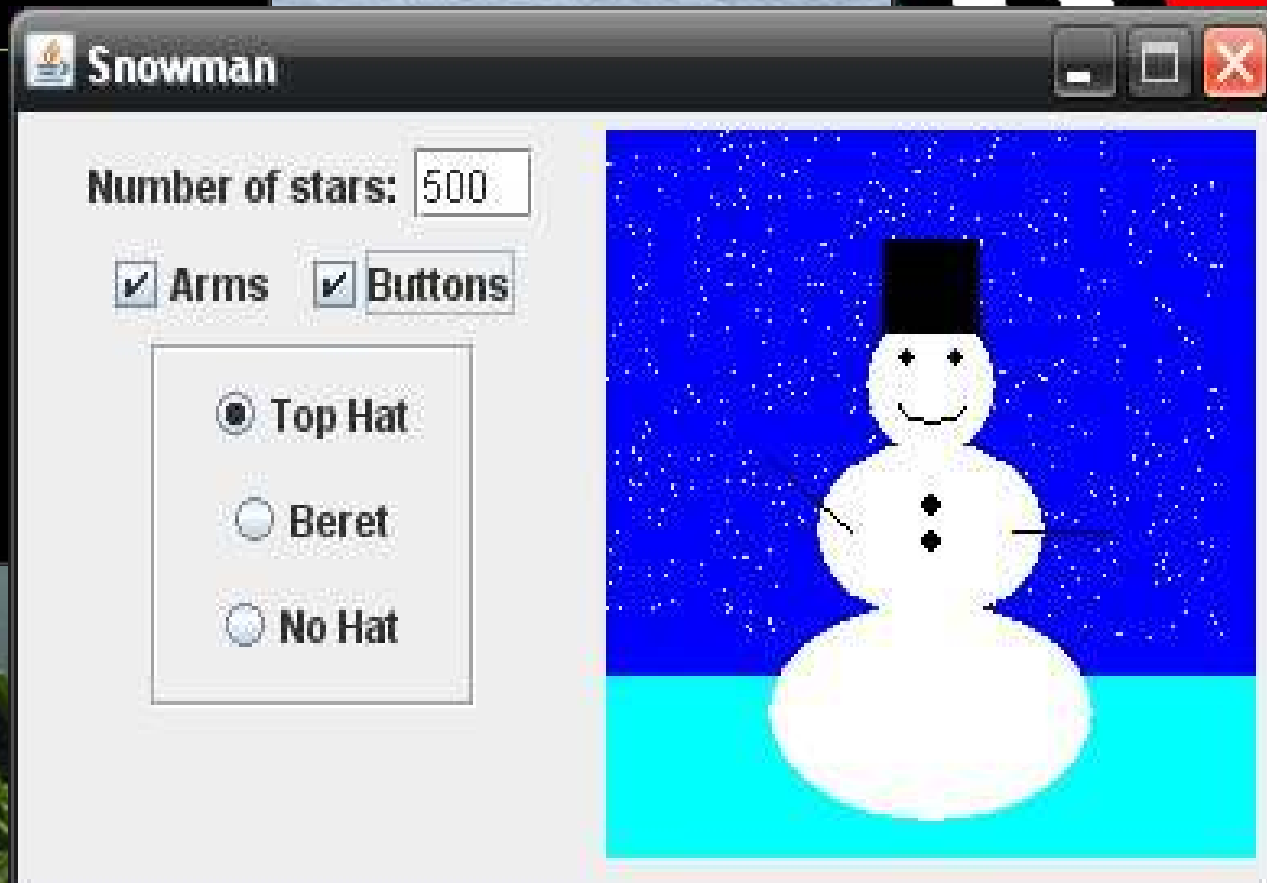
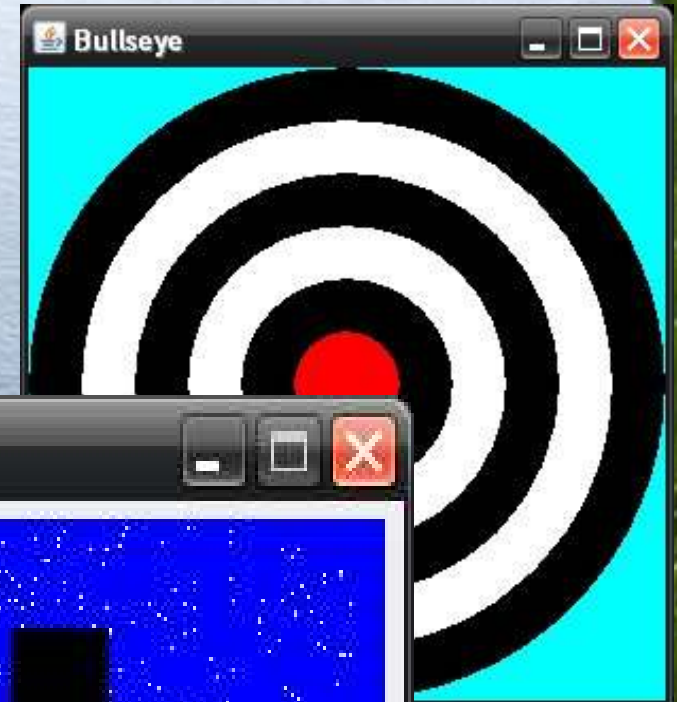
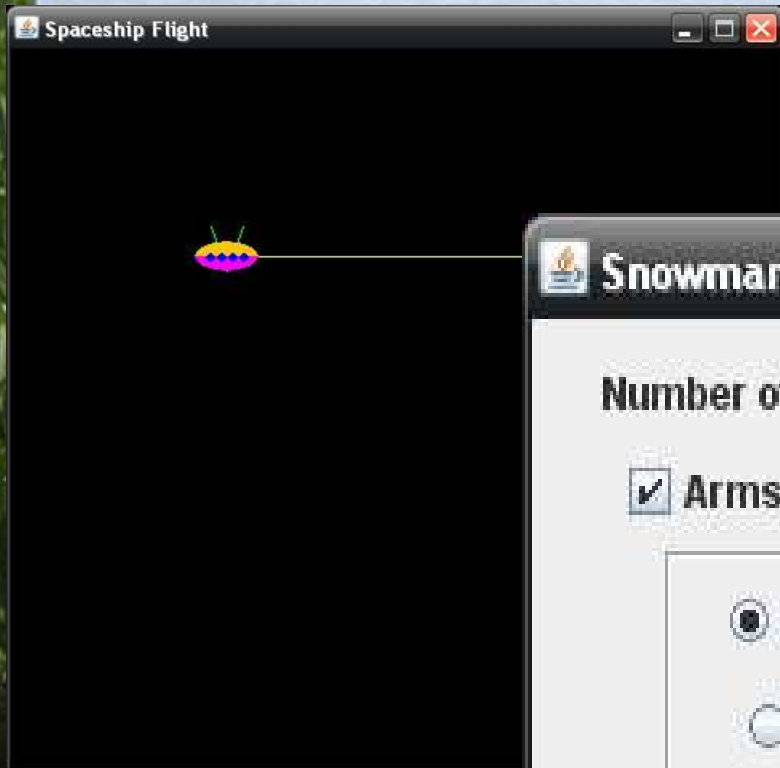
- Animations vs. multi-purpose programming
- Graphical vs. textual editing
- Direct vs. compile-and-run execution
- Static vs. dynamic object creation

Transitioning to Java - What's new?

- Indentation, readability
- Compile-time errors
- Logical errors
- Input validation, bounds checking

No need for "Hello, world!"

- Bull's Eye, Snowman, Spaceship



Object creation

- Class is a template for similar objects
- Extensible, new concepts can be introduced
- `Dog dog = new Dog();`
- Dynamic creation of objects

Object-oriented (OO) programming

Core concepts

- Encapsulation
- Inheritance
- Polymorphism

Alice

- Encapsulation - neither forced nor articulated
- Inheritance - no clear use
- Polymorphism - not used

Advanced OO programming

- Static methods and static variables
- (Anonymous) inner classes (event handling)
- Interface vs implementation inheritance
- Composition of objects: aggregation, mix-in interfaces
- Design patterns: factory, singleton, visitor

Typical mistakes of students

- Too long functions
- Copy-paste code
- Magic numbers
- Lack of coding conventions
- Erroneous use of class variables

Tip of the Day



Did you know...

Always code as if the person who will maintain your code is a maniac serial killer that knows where you live.

Show tips at startup

Next Tip

Close

Courtesy of Microsoft Visual C++

Summary

- Alice seems like a good springboard to Java
- Some syntax needs to be re-learned
- OO concepts are not clearly articulated in Alice

Alice: Future

- Alice 3.0 is coming in 2009
- It will allow Java coding besides the graphical editing
- Alice projects can be imported to Netbeans