Einführung in die Programmierung
Introduction to Programming

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Exercise Session 3
Today

- Any problem in installing EiffelStudio?
- Review of concepts from last week
- Important concepts from the lecture
- Found a Bug in EiffelStudio?
- POP vs. OOP
Review of Concepts from Last Week

- Compiled vs. interpreted languages
- Melting, freezing, and finalizing
- Root object
  - Who creates it?
  - Where is its type defined?
Important Concepts from the Lectures

- Type of an object
  - What does it tell you?
  - Where in a program can you declare it?
- Contracts
  - What is a precondition for?
  - What is a postcondition for?
Found a bug in EiffelStudio?

If EiffelStudio happens to crash:

- You should submit an official bug report by pressing the button that appears when EiffelStudio crashes
How to submit a bug 1: submit bug

Internal EiffelStudio Exception
An internal failure occurred. If this happens even after relaunching EiffelStudio, perform a clean recompilation.

You can submit a bug report at http://support.eiffel.com or use the Submit Bug button below.
How to submit a bug 2: login

Login: ethinfo1, Password: ethinfo1
How to submit a bug 3: submit

Better leave your email address in the comment.
Programming task

- Define a type named `Point`: each variable of type `Point` has two fields `x` and `y`, both of type `float`.
- Provide variables of type `Point` with the following operations
  - **Initialization**. Given a point and two floats, set the two fields of the point using the floats;
  - **Distance to origin**. Given a point, returns the distance between the point and the origin;
  - **Move left**. Given a point and a float, move the point towards left by that much distance;
- A program that uses type `Point` and all the three operations.
Translation From OOP to POP

- Classes to structs
  - Attributes to fields
  - Member functions to functions
    - Declaration: target object as an implicit formal argument
    - Call: target object as an implicit actual argument

- Automatic to manual memory management
  - Initialization
  - Cleaning up
What are Good about OOP?

- Encapsulation/Information hiding
  - Cartesian coordinate system \( \rightarrow \) Polar coordinate system

- Inheritance

- Polymorphism