Computer Science 227
Introduction to Programming

Iowa State University

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Recap

Created a class named BankAccount

- methods: deposit, withdraw, getBalance, getName, getAccountType
- instance variables: name, accountType, balance
- Two constructors
Recap

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- Two constructors

Start with specifications:
- What is the functionality?
- Parameters and return type
- Method header
- Javadoc Comments

Decide on instance variables

Implement the methods

Add constructors
Two types of Java programs

- Programs that create a class (new data type) with NO main method:
  Can not run such programs
  - eg: BankAccount Class

- Programs with main method (can have variables of type we created):
  Application programs, can run such programs
  - eg: UseBankAccount: has main method, has variables of type
    BankAccount
Constructors

We can create objects of any non-primitive data type (objects of any class) Object has two parts: instance variables (data), methods.

How to create an object and assign initial values to instance variables?

Want to create an object of class BankAccount with name "Harry", balance 100, and accountType "checking".
Constructors

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- Object has two parts: instance variables (data), methods.
- How to create an object and assign initial values to instance variables?
Constructors

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Constructors

Constructors assign initial values to instance variables

- Constructor is like a method: Name of the constructor—name of the class.
- Constructors can have parameters: Typically one parameter for each instance variable
- Constructors has no type
Constructors

public BankAccount(String nameP, double balanceP, String accountTypeP)
    name = nameP;
    balance = balanceP;
    accountType = accountTypeP;

In UseBankAccount

BankAccount b = new BankAccount(‘‘Harry’’, 100, ‘‘Checking’’);

Creates a BankAccount object with specified initial values.
A class can have more than one constructor:

```java
public BankAccount(String nameP)
    name = nameP;
    balance = 0;
    accountType = "Checking’’;
```

In UseBankAccount

```java
BankAccount c = new BankAccount("John’’);
```

Creates BankAccount object with name “John”, balance 0, and type “Checking”.
Before using in “actual programs”, test the functionality of the class (and methods).

- Tester creates objects of a class.
- Call a method.
- prints return value of the method and expected value

How to choose test cases?
Good Coding Conventions

- Comment your code: inline comments(//), block comments(/* */), JavaDoc comments(/** **/)
- Choose appropriate variable names:
  - Class name: Starts with Upper case letter (BankAccount)
  - variable name: Starts with lower case letter (balance, accountType)
  - method name: starts with lower case letter (withdraw, getBalance)
  - package name: starts with lower case letter.

In HW and labs, part of your grade depends on following good coding conventions.
Pizza

Create a class named Pizza from given API. API can be found at http://cs.iastate.edu/~pavan/227/F11/Pizza.pdf
Practice Problems

- Create a class to model a TV. API can be found at http://cs.iastate.edu/~pavan/227/F11/TV.pdf
  You do not need if-statements to do this!

- Create a class to represent Complex Numbers. API can be found at http://cs.iastate.edu/~pavan/227/F11/Complex.pdf