

Midterm Review

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CMPT166

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Review on one slide

- Java basics (ch1)
 - Console I/O (2), if/while/for (3)
 - Arrays (6), Exceptions (9), File I/O (10)
- OO design: Classes, access modifiers (4)
 - static, Alias/ref, Packages (5)
 - Inheritance (7), Polymorphism, abstract (8)
 - Interfaces, Inner classes (13)
 - UML: CRC/class, use-case
- Swing (17-18): events, listeners, layout, widgets, drawing

Java basics (ch1-3, 6, 9)

- Java system: **JDK/JRE**, bytecode, VM
 - 8 **primitive** types (and OO wrapper classes)
 - **Style**: naming, Javadoc comments
- **I/O**: Formatter (**print/ln/f**), Scanner, (**next***)
- **if/else, switch, while, for(;;), break/continue**
- **Arrays**: declare → allocate → instantiate elts
 - Python-style for loops: **for (elt : array)**
- **Exceptions**: **try/throw/catch**
 - **Catch-or-declare** rule

File I/O (ch10)

- File object
- Text-based I/O:
 - `PrintStream`, `print/ln/f()`
 - `Scanner`, `next/Int/Double/Line()`
- Byte-based I/O: `File{Output,Input}Stream`
- Object-based I/O: (implements `Serializable`)
 - `ObjectOutputStream`, `.writeObject(obj)`
 - `ObjectInputStream`, `.readObject()` (`Object`)
- Exceptions (`IOException`): `FileNotFoundException`, `EOF`

OO concepts (ch4-5, 7-8, 13)

■ Creating classes: attributes/methods

- **private** → (package) → **protected** → **public**
- **Constructors**, calling **self()**, copy constructor
- **static**: class methods/attribs; static import

■ **Inheritance**: overriding, polymorphism

- OO **design**: UML class diagram, use-case diag
 - ◆ “has a” vs. “is a” vs. “knows how to”
 - ◆ Subclass, assoc/aggr/comp, multiplicity
- **Abstract**, (mthd, cls) **final** (attrib, mthd, cls)
- **Inner** classes (e.g., for event listeners)

Swing (ch17-18)

- **Event programming model:**
 - `main()` → JFrame subclass **constructor**
→ create/layout **widgets**
 - **Events** → event **listeners**
- **Widgets:** JPanel, JButton, JLabel, JTextBox, ...
 - **Action cmd:** `.setText`, `.getActionCommand()`
 - **Menus:** MenuBar, Menu, MenuItem
- **Layout managers:**
 - Flow, Border, Grid, GridBag, Group
- **Drawing:** `paint/Component()`, shapes, colour