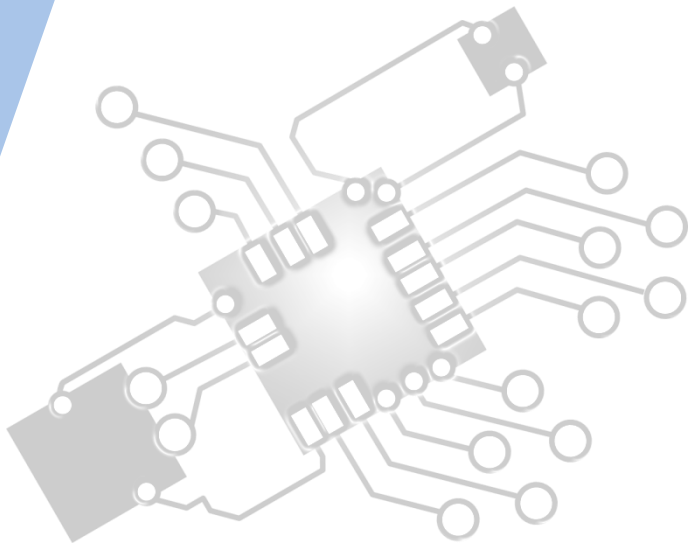
Objects as a programming concept

IB Computer Science



Content developed by
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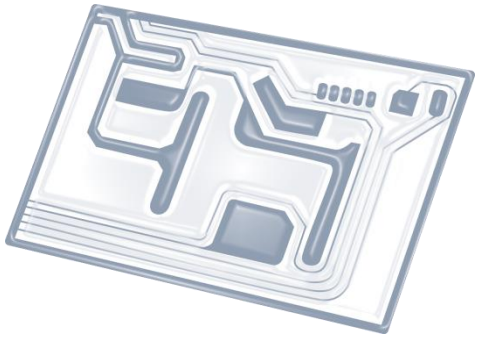
HL Topics 1-7, D1-4



1: System design

2: Computer Organisation

3: Networks

4: Computational thinking

5: Abstract data structures

6: Resource management

7: Control

D: OOP

HL & SL D.3 Overview

D.3 Program development

D.3.1 Define the terms: class, identifier, primitive, instance variable, parameter variable, local variable

D.3.2 Define the terms: method, accessor, mutator, constructor, signature, return value

D.3.3 Define the terms: private, protected, public, extends, static

D.3.4 Describe the uses of the primitive data types and the reference class string

D.3.5 Construct code to implement assessment statements

D.3.6 Construct code examples related to selection statements

D.3.7 Construct code examples related to repetition statements

D.3.8 Construct code examples related to static arrays

D.3.9 Discuss the features of modern programming languages that enable internationalization

D.3.10 Discuss the ethical and moral obligations of programmers

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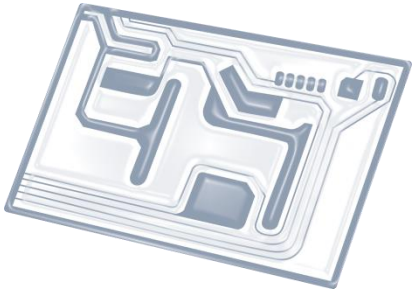
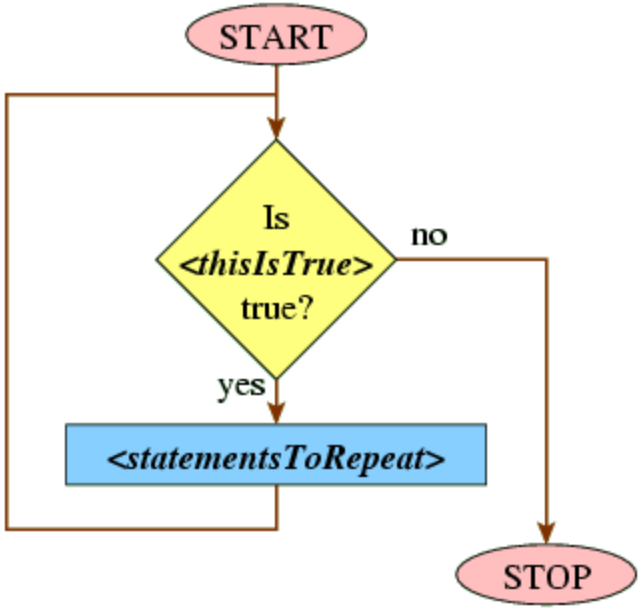


Topic D.3.7

Construct code examples related to **repetition** statements



Practice code that uses:

- FOR loops
- WHILE loops

```
public static void main(String[] args) {

    int loopVal;
    int end_value = 11;
    int addition = 0;

    for (loopVal = 1; loopVal < end_value; loopVal++) {

        addition = addition + loopVal;
    }

    System.out.println("Total = " + addition);
}
```

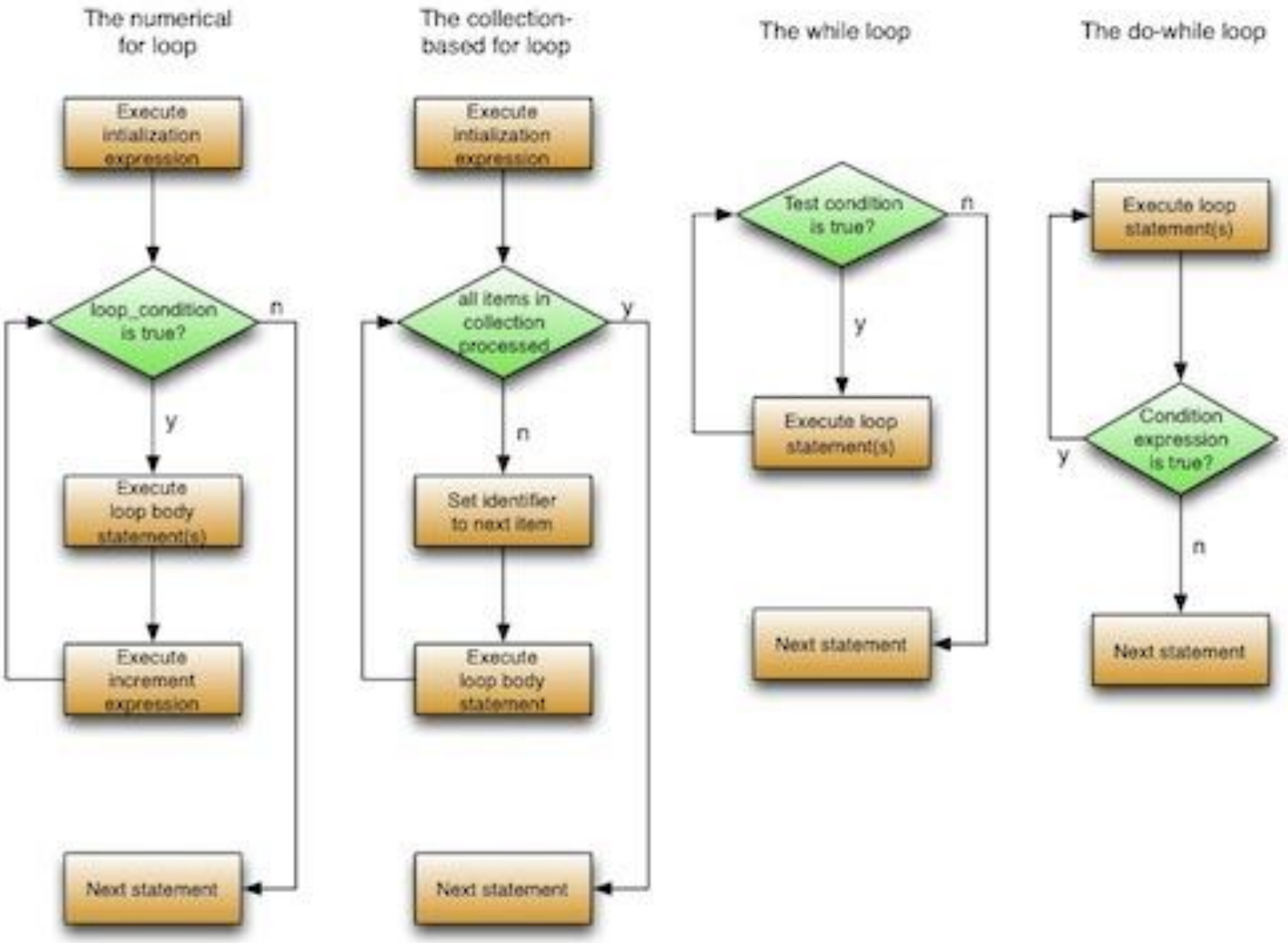
```
// This part is for Java 2 only
/*  Vector v = new Vector(table.values());
    Collections.sort(v);
    Enumeration list = v.elements(); */

// And this is for earlier versions
Enumeration list = table.elements();

// Common code
StringBuffer outFileName =
    new StringBuffer(inFile.getName());
outFileName.setCharAt(0, 'C');
outFileName.setCharAt(1, '_');

String outFile = outFileName.toString();
try {
    FileWriter out =
        new FileWriter(outFile, false);

    while(list.hasMoreElements()) {
        Word temp = (Word)list.nextElement();
        out.write(temp.toString() + NLINE);
    }
    out.close(); // finished
} catch(IOException err) {
    System.err.println("Error in WordCount:count()"
        + " outfile:" + NLINE + err.getMessage());
}
```


The numerical for loop
Execute intialization expression
loop_condition is true?
n
y
Execute loop body statement(s)
Execute increment expression
Next statement
The collection-based for loop
Execute intialization expression
all items in collection processed
y
n
Set identifier to next item
Execute loop body statement
Next statement
The while loop
Test condition is true?
n
y
Execute loop statement(s)
Next statement
The do-while loop
Execute loop statement(s)
Condition expression is true?
y
n
Next statement

Three steps to exam-prep

- Make **flashcards** of all key concepts
- **Practice programming** all concepts on the **computer** using an IDE (like Eclipse)
- **Practice programming** on **paper** (*very important!*)

Warning: Don't depend too much on past papers. Questions change every year and no scenario will ever repeat.