# ch1-4 Review

*devo*

6 Oct 2005
CMPT14x
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***Reminders:***

***1) journals in folder***

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# Announcements

- Midterm ch1-4 this Friday in-class
  - Includes material in text not covered in class!
  - Expect questions similar to quizzes
  - Bring blank sheets of paper
  - Closed book/notes/laptop/phone/calc
  - Review on Thu
- Thanksgiving next Mon: no M lab section
- CMPT140 final W-Th 26-27Oct in-class
- CMPT145 final W 14Dec 2-4pm Neu13

# Ch1-4 review

- Ch1: Problem solving
  - Top-down, WADES
- Ch2: Your first Modula-2 program
  - Modules, variables, expressions, type
- Ch3: Program Structure
  - Sequences, IF, loops
- Ch4: Procedures
  - Parameters:
    - value vs. variable, actual vs. formal
  - Functions, recursion

# Ch1: Problem solving

- Computing scientists as toolsmiths
- Top-down vs. bottom-up; WADES
- Client --> Designer --> Implementer
  - Requirements doc, Design spec, Code
- VARiables and CONSTants
- Abstract data types
- 5 hardware abstractions
- 5 control/flow abstractions

# Quiz ch1 (4 questions, 20 marks, 10 minutes)

- Copy this sentence and fill in the blanks:
  - "Computers are t____, and computer scientists are t_____."
- What are the five steps of top-down problem solving?
  - (it's okay if you don't get the exact words, but write the concepts)
- What's the difference between 3, 3.0, and "3.0"?
- Write down the three logical operators and evaluate them on your choice of TRUE and FALSE operands

# Ch2: A basic Modula-2 program

- Modules
  - Structure of a program module
  - IMPORTing library functions
  - Declaring variables, constants; initializing
    - Reserved words, identifiers
- Operators on basic types: +, -, *, /, DIV, ...
  - Comparison operators
  - BOOLEAN operators, shortcut
  - Precedence, type conversion
- Input/output on basic types (see next slide)

# Summary of I/O routines we know

- From STextIO:
  - ReadChar (char);
  - WriteChar (char);
  - WriteString (string);
- From SWholeIO:
  - ReadInt (int);
  - ReadCard (card);
  - WriteInt (int, width);
  - WriteCard (card, width);
- From SRealIO:
  - ReadReal (real);
  - WriteReal (real, width);
  - WriteFloat (real, sigFigs, width)
  - WriteEng (real, sigFigs, width)
  - WriteFixed (real, place, width);

# Quiz ch2 (3 questions, 20 marks, 10 minutes)

- Mark each of the following 6 strings with “ok” or “not ok” for being an identifier:

  **StudentRecord** **10thAnniversary**

  **monthly budget** **WriteString**

  **z** **twu.ca**

- What does this code snippet output?

```
WriteString (“Hello”);
WriteString (“World”);
```

- Write a complete Modula-2 program that reads a character from the user and prints it back to the screen.
  - Don't worry about “pausing” at the end of the program
  - Hint: remember the import and declaration blocks

# Ch3: Basic Program Structure

- Statement sequences
- Selection (IF, ELSE, ELSIF)
- Repetition/loops (WHILE, REPEAT)
  - Top-of-loop vs. bottom-of-loop testing
- Boolean expressions

# Quiz ch3 (# questions, 20 marks, 10 minutes)

- (8pts) Evaluate the following Boolean expressions, or if they give an error, indicate why:
  - (3 + 5 < 9) AND (14 MOD 3 = 2)
  - 7/3 = 2  OR  5>3
  - (6 < 4) & (2 / (4 – 4) = 0)
  - ~ 12 # 4
- (3pts) What is wrong with this loop? How would you fix it?

```
REPEAT
    counter := 9;
    statement sequence;
    counter := counter – 1;
UNTIL counter < 0;
```

- (9pts) Write a program to convert inches to centimetres or vice versa, depending on user input.

# Ch4: Procedures

- Declaring procedures
- Procedure parameters:
  - Formal vs. actual parameters
  - Value vs. variable parameters
  - Scope
- Function procedures
  - RETURN
  - Use in expressions
  - (example)

# Quiz ch4 (3 questions, 20 marks, 10 minutes)

- Describe in your own words the difference between value parameters and variable parameters.
- Write a Modula-2 procedure Swap that swaps the values of its two REAL parameters
- Write a function procedure SortPair that swaps the values of its two REAL parameters iff the first is greater than the second. The function should return TRUE iff a swap has been performed.

# TODO items

- Midterm ch1-4 tomorrow!
  - Includes material in text not covered in class!
  - Expect questions similar to quizzes
  - Bring blank sheets of paper
  - Closed book/notes/laptop/phone/calc
- Lab4 next Tue/Wed: 5.11 #(26 or 28 or 32)
  - M-lab section can turn it in up to a week late
- Quiz ch5 postponed until Fri 14Oct
- Reading: through §5.5 for Wed 12Oct