Nested Loops Revisited

Hui Chen

Department of Computer & Information Science

Brooklyn College

Objectives

- To write nested loops (§5.9).

- To learn loops from a variety of examples (GCD, FutureTuition, Dec2Hex, Monte Carlo Simulation) (§5.10 - §5.11).

Outline

- Discussed

  - Concept of loops

  - while Loop vs. do-while Loop vs. for Loop

  - Nested while loops

  - Pitfalls and Errors

- Nested Loops Revisited

Nested Loops Revisted

- Loops can be nested, i.e., in the loop body, we can have another loop

    - Nested while loops

    - Nested do-while loops

    - Nested for loops

    - Nested "any" loops

Problem. Print a multiplication table

- Write a program that uses nested for/while/do-while/any loops to print a multiplication table

	0	1	2	3	4	5	6	7	8	9
0	0	0	...							
1	0	1	2	...						
2	...	...	4	6	8	...				
3				9	12	...				
4										
5										
6										
...										

Problem. Print a generic number pyramid

- Print out a generic number pyramid of any height?

    - Example

```
                              1
                        1     2     1
                  1     2     4     2     1
            1     2     4     8     4     2     1
      1     2     4     8    16     8     4     2     1
   1     2     4     8    16    32    16     8     4     2     1
 1   2     4     8    16    32    64    32    16     8     4     2     1
1    2    4    8    16    32    64   128    64    32    16     8     4     2     1
```

Problem. Print a generic number pyramid

- Print out a generic number pyramid of any height?

  - Hint:

    - Determine field width first

    - Use String.format() or System.out.printf for formatting

    - Use nested loops

Questions?