CS 121 – Intro to Programming:Java - Lecture 8

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http://twiki-edlab.cs.umass.edu/bin/view/Moll121/WebHome
THE WEBSITE LISTS IMPORTANT ANNOUNCEMENTS, AND
ALSO ASSIGNMENTS!!!!!

Announcements

Fourth OWL assignment due next Tuesday;

Third Programming assignment up / due 10/3 (see website)

Midterm posted (W evening 10/15)

TA Office hours: M 12-4; TU 1-3:40; W 4-6; TH 1-4; F 12:30-4:30, in (back room next to) LGRT 223

OWL acct / edlab acct (PW = oit name, e.g. pbaker, UN = student id)
Arithmetic and Operator Precedence

Key features:
1) +, -, * behave in the standard way. Division / is different

2) \( 5/3 = 1 \) (but \( 5.0/3 = 5/3.0 = 1.6666 \)), \( 10/4 = ? \)

3) In the absence of parentheses, *,/, have higher precedence than +,- This means that \((3 + 5 * 2) = 13\), \((7 - 4 / 2) = ?\)

4) The remainder operator is %: \( 10 \% 3 = 1 \), \( 10 \% 7 = ? \)

\((3 + (7/2)) = ?\)
\((2 * 3 - 1 + 5 / 3) = ?\)
\((20 \% (9 \% 4)) = ?\)
\((5 \% 0) = ?\)
Conditional, Looping Statements in Java

Conditional statements and looping statements are flow of control constructions.

At a primitive level, Java programs are made up of statements, and it often makes sense to

1) have statements repeat in a systematic way; and
2) have statements execute conditionally
Conditionals first - Consider:

if (n % 2 == 0) System.out.println("n is even");

Lots going on here: statement says: “if the remainder after dividing n by 2 is equal to (==) 0, then report that n is an even number

if (n % 2 != 0) System.out.println("n is odd"); else System.out.println("n is even");

An important point: (n % 2 == 0) is a boolean expression (returns a boolean value) -- a boolean must go into the test slot of an if stmt! Nothing else will do!!
import java.util.Scanner;

public class AddUp{
    public static void main(String[] args){
        Scanner s = new Scanner(System.in);
        System.out.println("Enter start,stop nums");
        int first = s.nextInt();
        int last = s.nextInt();
        int sum = 0;
        for (int n = first; n <= last; n=n+1){
            sum = sum + n;
        }
        System.out.println("sum from "+first+" to "+last);
        System.out.println(": "+ sum);
    }
}
import java.util.Scanner;
public class AddUp{
    public static void main(String[] args){
        Scanner s = new Scanner(System.in);
        System.out.println("Enter start,stop nums");
        int first = s.nextInt();
        int last = s.nextInt();
        int sum = 0;
        for (int n = first; n <= last; n=n+1){
            if (n % 3 == 0)
            {sum = sum + n; System.out.println(n+" div 3");}
        }
        System.out.println("sum from "+first+" to "+last);
        System.out.println(": "+ sum);
    }
}
for(char c = 'a'; c < 'f'; c = (char)(c + 1)) {
    System.out.print(c);
}

You can compare chars: they come in a fixed order, and each char has a position in the order
What is ('a' + 1)  (ans: 98)
What is (char)98   (ans: 'b')
What is ('B' - 'b') (ans: 32) - huh??
for(char c = 'A'; c < 'z'; c = (char)(c + 1)){
    System.out.print(c);
}

Output:

ABCDEFGHIJKLMNOPQRSTUVWXYZ[^ \_`abcdefghijklmnopqrstuvwxyzuvwxyz]
Some syntax:

```plaintext
for(....; ....;...)  
    stmt;
```

Or

```plaintext
for(....; ....;...){
    stmt1;
    stmt2;
    ...
    stmtn;
}
```

A Block
Some syntax:

if (boolean)
    stmt;

Or

if(boolean){
    stmt1;
    stmt2;
    ...
    stmtn;
}

A Block
Binary conversion - b is a binary string

```java
int pow = 1;
int total = 0;
for(int j = b.length()-1; j >= 0; j--){
    if (b.charAt(j) == '1') total += pow;
    pow = 2*pow;
}
```

At the end, total holds decimal integer representation of b
Freestyle work: text processing

Regular Expressions are a principal tool in Java (and elsewhere in computing) for line-oriented string searching.

Check the website for your (modest!) assignment on regular expressions.

A “trapdoor” tutorial on regular expressions and their use will be added to the textbook shortly