* Golub
  + 1.  What does the acronym CVS stand for?
    - Concurrent Versioning System
  + 2.  What does IDE stand for?
    - Integrated Development Environment
  + 3.  What IDE will we use in class this semester?
    - Eclipse
  + 4. What does CPU stand for?
    - Central Processing Unit
  + 5. Define the term "bit".
    - A binary value
  + 6. Define the term "byte".
    - 8 bits
  + 7. What is "hardware"?  Name some examples.
    - The physical part of the computer. e.g. motherboard, cpu, ram
  + 8. What is "software"?  Name some examples.
    - The programs e.g. OS, Microsoft word
  + 9. Name several different operating systems.
    - Linux, Unix, Windows, OSX
  + 10. Give some examples of secondary memory devices.
    - USB, CD, Hard disk,
  + 11. What is the advantage of primary memory over secondary?
    - Faster
  + 12. What is the advantage of secondary memory over primary?
    - Permanent
  + 13. What does I/O stand for?  Give some examples of I/O devices.
    - Input/Output – keyboard, mouse, turnoff button
  + 14. How many different combinations of 0's and 1's can be represented using 7 bits?
    - 128
  + 15. How many bytes are in a kilobyte?  Megabyte?  Gigabyte?
    - 1000/1024 – kilobyte | 10^6 – Megabyte | 10^9 – Gigabyte
  + 16.  Name four things that the operating system does for you.
    - I/O
    - Manages passwords and files
    - Manages memory
    - Process Management
  + 17.  What do you call the language that the CPU uses (0's and 1's represent instructions in this language).
    - Machine Code
  + 18.  How does "assembly language" relate to your answer to the previous question?
    - Allowed names to be given to addresses
  + 19.  Name some higher level languages that were NOT designed for object oriented programming.
    - C, Cobol, Fortran
  + 20.  Name some higher level languages that WERE designed for object oriented programming.
    - Java, C#, C++
  + 21. Translate the number 123 into base 7 representation.
    - 234
  + 22. Translate the binary (base 2) number 1011010 into base 10 representation.
    - 64+16+8+2 = 90
  + 23. Translate the hexidecimal (base 16) number 7F into binary representation.
    - 01111111
  + 24.  When your Java program is compiled, what type of file is created?  (Hint:  It is NOT machine language.)
    - bytecode
  + 25.  What does it mean for someone to say that a Java program is "portable"?
    - Can run any machine with JVM
* Golub
  + 1.  When your Java program is compiled, what type of file is created?  (Hint:  It is NOT machine language.)
    - bytecode
  + 2.  What does it mean for someone to say that a Java program is "portable"?
    - The program can run on any machine with JVM
  + 3.  TRUE/FALSE:  Inserting unnecessary spaces and/or blank lines could cause your Java program to malfunction.
    - False
  + 4.   What is the difference between "syntax errors" and "logical errors"?
    - syntax error are typos – logical errors are errors that run but don’t give you the right result
  + 5.   If your program compiles and runs, but behaves incorrectly, are you probably suffering from "syntax" or "logical" errors?
    - logical
  + 6.  If Eclipse flags your code with a red mark and won't let you compile it, are you suffering from "syntax" or "logical" errors?
    - syntax
  + 7.   List the four Java primitive types that can be used to store integer values.
    - byte
    - short
    - int
    - long
  + 8.   How much memory is required to store each of the four types mentioned in the previous question?
    - 1
    - 2
    - 4
    - 8
  + 9.  What advantage do you gain from using one of the types of integer types that requires MORE memory?
    - Wider range of numbers
  + 10.   List the two Java primitive types that can be used to store floating point values.
    - Float
    - double
  + 11.   How much memory is required to store each of the two types mentioned in the previous question?
    - 4 bytes
    - 8 bytes
  + 12.  What advantage do you gain from using one of the floating point types that requires MORE memory?
    - Real numbers
  + 13.  List the two Java types that are used to store values that are not numbers.
    - Char
    - Boolean
  + 14.  Write a statement that declares a variable named counter of type int, and stores the value 182 in the variable.
    - Int counter =182
  + 15.   Write a statement that simultaneously declares three variables of type boolean, named x, y, and z.
    - Boolean x, y, z;
  + 16.  What values can a boolean variable achieve?
    - True or false
  + 17.  Write a java class called "Fred".  Put in a main method.  Have the main method store your age in a variable named age. Then main should print out a line that has your name, followed by your age.  (Use a "string literal" for your name, but use the variable to access your age.)
    - public class Fred {

public static void main(String[] args) {

int age = 22;

String name = “Chinedum”

System.out.println(name+“ ”+age);

}

}

* + 18.   Practice using BOTH styles for Java comments.
  + 19.   Is the following statement valid:     int x = 34.7;
    - NO
  + 20.   Is the following statement valid:     double y = 12;
    - YES
  + 21.   Is the following statement valid:      boolean q = 17 < 25;
    - YES
  + 22.   Evaluate the following Java expression:  9 - 15 \* 6 / 11 + 4
    - 53/11
  + 23.   Evaluate the following Java expression:  75 % 7
    - 5
  + 24.  Never forget that you should not compare two Strings with the == operator.  Suppose you have two String variables, x and y.  Give an expression that can be used to check whether or not the Strings x and y are identical.
    - x.equal(y)
  + 25.  What is "concatenation"?  What operator do you use to concatenate Strings?
    - Joing two strings together. Use +
  + 26.   What is the difference between System.out.print and System.out.println?
    - println moves the cursor to a new line have the output
  + 27.  Suppose you have a String variable called s.  What expression will return the number of characters in the String?
    - s.length()
  + 28. Give examples of "literals" of each of the following types:  String, char, long, int, float, double, boolean.
  + 29.  What "escape sequence" would you use in a String to indicate a "new line"?
    - \n
* Golub
  + 1.  What are the three logical operators?
    - == <, >
  + 2.  Write "truth-tables" for && and ||.
    - TFFF
    - TTTF
  + 3.   Is the following boolean expression true or false?    ((3 < 5) && !(1 > 14) && (-5 < -15)) || ((6 == 6) && !(2 == 2))
    - False
  + 4.  If s1 and s2 are variables representing Strings, what Java boolean expression is equivalent to "s1 is not the same as s2"?
    - s1 != s2
  + 5.  What statement must be included at the top of a file in order to use the Scanner in the file?
    - Java.util.Scanner
  + 6.  Write a java class called "UserInput".  In the main method, declare three variables:  an int, a float, and a String.  Name the variables "age", "weight", and "name".  Create a variable called "scan" of type Scanner, and set it equal to a new Scanner.  (Use the syntax shown in class).  Prompt the user to enter his/her age, weight, and name - read these entries in using the scanner and set the variables accordingly.  Then print the values of the three variables with appropriate labels.  For example:  "Name:  Frank     Age:  17    weight:  151.4".
    - import java.util.Scanner
    - public class UserInput {
      * public static void main(String[] args) {
        + int age, weight;
        + String name;
        + Scanner sc = new Scanner(System.in);
        + System.out.println(“What is your name?”)
        + name = sc.next()
        + System.out.println(“How old are you?”)
        + age = sc.nextInt()
        + System.out.println(“How much do you weigh?”)
        + weight = sc.nextInt();
        + System.out.println(“Name: “+name+” Age: “+age+” weight: “+weight);
      * }
    - }
  + 7.  Write a java class called "FahrenheitToCelsius".  The main method will ask the user to enter a temperature in Fahrenheit.  (Use a variable of type **double** to store the value.)  Then calculate the equivalent temperature in Celsius, and print out a message telling the user what you found.  [Recall: C = (5/9)(F-32).]  Hint:  Be careful about doing arithmetic with integers!  Check your program by entering 212 degrees.  The output should be 100.
    - import java.util.Scanner
    - public class FahrenheitToCelsius {
      * public static void main(String[] args) {
        + double f, c;
        + Scanner sc = new Scanner(System.in);
        + System.out.println(“Enter the temperature in Fahrenheit”);
        + f = sc.nextDouble();
        + c = 5 (float) / 9 \*(f - 32);
      * }
    - }
  + 8.  Modify the "FahrenheitToCelsius" question in the previous question so that the user can either go from F to C or vice versa.
  + 9.  FOR THIS EXERCISE, YOU SHOULD STRIVE TO AVOID REDUNDANT CODE!  Write a java class called "RequestInfo""  The main method will ask the user to enter his species.  If the user enters "dog", then ask him to enter the number of cats he has eaten this year.  If the user enters "cat", ask him to enter the number of hairballs he has coughed up this year.  If the user enters "predator", ask him to enter BOTH the number of cats he has eaten this year AND the number of hairballs he has coughed up this year.  If the user enters anything else (not dog, cat or predator), tell him that he is from another planet, and terminate the program.  If the user DID enter one of the three valid species (dog, cat, predator) then print out a report in the following format:
  + Species:  dog
  + Number of cats eaten:  54
  + Number of hairballs:  0
  + 10.  Write a program that computes the letter grade for a student based on his/her numerical total.  The program will read in the total and compute the letter grade based on the following:  to get an A the total must be at least 90.0.  To get a B it must be at least 80.0.  For a C, at least 70.0.  For a D, at least 60.0.  Less than 60.0 is an F.
  + 11a.  Write a program that asks the user to enter up to four scores from 1 to 10.  At the end the program will print out the total of the scores, but without including the highest score.  The catch is that at any time the user may enter 999 to indicate that he has no more scores to report.  For this version, you may not use any loops!   For example, here are a couple of possible runs of the program:
  + **Example 1:**
  + Enter score 1:  5
  + Enter score 2:  7
  + Enter score 3:  9
  + Enter score 4:  3
  + The total (without the highest) was: 15
  + **Example 2:**
  + Enter score 1:  8
  + Enter score 2:  9
  + Enter score 3:  999
  + The total (without the highest) was: 8
  + 11b. Do the same thing as in 11a but using a while loop.
  + 12.  Decide which of the following variable names are valid in Java:   dog, x11, \_tomato, big$deal, how&why, 22down, aBcDeFg, \_$\_\_$, under\_score, \_5\_$\_5\_hello13.
    - Dog – valid
    - X11 = not valid
    - \_tomato = valid
    - big$deal = not valid
    - how&why = not valid
    - 22down = not valid
    - aBcDeFg = not valid
    - \_$\_\_$ = not valid
    - under\_score = valid
    - \_5\_$\_5\_hello13 = not valid
  + 13.  Write a program that asks the user for an integer, call it n.  The program will then add up all of the integers from 1 to n and print out the total.  For example, if the user enters 4, then the output should be 10.  (Because 1 + 2 + 3 + 4 = 10).
  + 14.  The factorial of an integer is the product of all positive integers that are less than or equal to it.  For example, 4 factorial is 2 \* 3 \* 4 = 24.  Write a program that asks the user to enter a value, n, and then prints n factorial.
  + 15.  Write a program that asks the user to enter two values: x and y.  You must then compute the product of all integers from x to y.  For example, if the user has entered 10 and 7, then the output should be 5040 (because 7 \* 8 \* 9 \* 10 = 5040).
  + 16.  Write a program that "simulates" the reading password process you go through while logging into a computer account.  The program will ask for a password, compare the value against two possible passwords (that are built-in), and print "Welcome" if the password provided by the user is valid. Otherwise, ask the user to enter the password again.  (This process repeats.)
  + 17.  Write a program that asks the user to enter the number of rows and columns.  It will then print out a rectangular grid of asterisks.  For example, if the user has entered 6 rows and 3 columns, then the output should be:
  + \*\*\*
  + \*\*\*
  + \*\*\*
  + \*\*\*
  + \*\*\*
  + \*\*\*
  + 18. CHALLENGE QUESTION  Write a program that asks the user for a size (an integer).  The program will then print out four different triangles made out of asterisks of that size.  (You will need to print out spaces sometimes in front of the asterisks.)   This is a "challenge" problem. Below is the output if the user selected size 4:
  + \*\*\*\*
  + \*\*\*
  + \*\*
  + \*
  + \*
  + \*\*
  + \*\*\*
  + \*\*\*\*
  + \*\*\*\*
  + \*\*\*
  + \*\*
  + \*
  + \*
  + \*\*
  + \*\*\*
  + \*\*\*\*
  + 19.  Write a program that asks the user for a size, and then prints out a multiplication table of that size.  (You don't have to worry about spacing correctly, just try to get the numbers to all come out on the right rows.)  For example, if the user requests size 4, the output should be:
  + 1 2 3 4
  + 2 4 6 8
  + 3 6 9 15
  + 4 8 12 16
* 1.  Go back to the loop questions from the previous week and implement them all using for-loops instead of while loops!
* 2.  What will the output be: **(x = 2);**
* int x = 2, y = 7;
* if (y < 1 && x++ < 7)
* System.out.println("hello");
* System.out.println("x = " + x);
* 3.  What will the output be: **(x = 7, y = 10, z = 46)**
* int x = 7;
* int y = x++ + 3;
* int z = 7 \* --x + 4;
* System.out.println("x = " + x + ", y = " + y + ", z = " + z);
* 4.  What will the output be: **(7)**
* int x = 5;
* x += 7;
* x -= 2;
* x /= 2;
* x \*= 8;
* x %= 11;
* System.out.println(x);
* 5.  Write a chart showing the precedence of all of the following operators:   = , < , ==, &&, ||, !=, ++, + (addition), +=, --, \*
* 6.  If two operators occur in the same expression, and they are on the same level in the precedence chart (it is a "tie"), how do you decide which operator gets evaluated first? **Left to right**
* 7.  Using parentheses indicate the order in which each of the following expressions will be evaluated or state that the expression represents an invalid expression.  You may assume that all variables are of type int.
* a. ((x / y )\* z) % w
* b.  ((x ++) + y) ++
* c.  x + y + z – ((w % p) \* 2))
* d.  x < y || z > m && y <= 4
* 8.  Write psuedocode for a program that computes the number of digits in an integer.  For example, if the user enters 1792, the output will be the value 4.
* 9.  Write psuedocode for a program that reads a sequence of integer values and decides whether or not it is a decreasing sequence.  The program will first read in the number of values to process, followed by the values themselves.  The output will be "Yes" if the sequence is decreasing, and "No" otherwise.
* 10.  Which of the following code fragments are OK, and which will cause problems?
* a.  int x = 52;
* double y = x; **ok**
* b.  double x = 14;
* int y = x; **no**
* c.  int x = 7;
* long y = x; **ok**
* d.  long x = 17L;
* short y = x; **no**
* 11.  Show how to use "explicit casting" to force the troublesome examples in the previous question to work. (NOTE: This is something that is in the posted notes.)
  + int y = (int) x;
  + short y = (short) x;