CIS 1068 Practice Problems: Variable, expression, and I/O

1. For the following program, please mark the errors and provide the correction (directly on answer sheet, no need for source code submission). See slides 6-19 as reference. Note you will lose points if you make any unnecessary change.

```
Public Welcome {
        Static main (String args [ ])
        {
                print ("Welcome to CIS 1068)
                println ( " \"It\\'s fun to play \" ")
}
}
```

**2. Check if the following names can be a valid variable name.** Answer true or false in ( ). See slide 28 as reference.

a)   (   )   a2
b)   (   )   2a
c)   (   )   n\
d)   (   )   \n
e)   (   ) $2
f)   (   )   2$
g)   (   )   a$
h)   (   ) $
i)   (   )   2
j)   (   )   a=b

3. Check if the following statement is a valid assignment. Answer true or false in ( ). See slides 42-43 as reference.

a)   (   )   2 = a
b)   (   )   2a = 2
c)   (   )   system.out.print = 1+ 4
d)   (   )   a = a
e)   (   )   a = a - * b
f)   (   )   a = a * - b
g)   (   )   a = 2b
h)   (   )   a + b = c
i)   (   )   - b = c
j)   (   )   a = b2

4. Understanding code. Draw what the computer's memory looks like at the end of each of these programs (see slides 26, 38, and 43 as reference)

```
public class Expressions_Declarations {
    public static void main(String [] args) {
        int x;
        double y;
        String s;
    }
}
```

x ☐ y ☐ s ☐
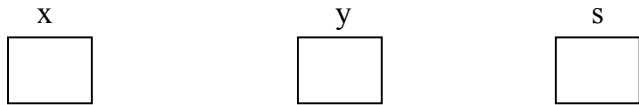
```
public class Expressions_Assignment {
    public static void main(String [] args) {
        int x = 7, y = 9;
        double z = x;
        x = 8;
        y = y - 3;
    }
}
```

x ☐ y ☐ z ☐
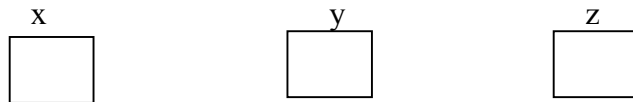
```
public class Expressions_IntDiv {
    public static void main(String [] args) {
        int x = 3;
        double y = x / 4;
    }
}
```

```
public class Expressions_OrderOfOps {
    public static void main(String [] args) {
        int x = 1 + 2 * 3 – 4;
    }
}
```

```
public class Expressions_Modulus {
    public static void main(String [] args) {
        int x = 3,
        int y = 7 % x;
        int z = x % 2;
        y = y % 1;
        z = x % 0;
    }
}
```
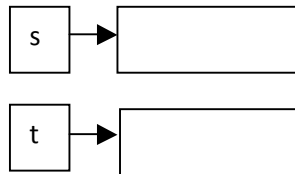
```java
public class Expressions_TypeConversions {
    public static void main(String [] args) {
        double x = 1.0;
        double y = 1;
        double z = y + 1;
        x = 1 / z;
        int a = (int) x;
        a = a + x;
    }
}
```

```java
public class Expressions_StringConcatenations {
    public static void main(String [] args) {
        String s = "hello";
        String t = "15";
        s = 9.5 + s;
        t = t + 10;
        t = t + "5";
    }
}
```

s → [ ]

t → [ ]

```java
public class Expressions_WithPrintln {
    public static void main(String [] args) {
        String s = "hello";
        String t = "115";
        int a = 7 / 3;
        double d = 6.0 / a;
        System.out.println("what is a? " + a);
    }
}
```

```java
import java.util.Scanner;
public class Expressions_Scanner {
    public static void main(String [] args) {
        Scanner kb = new Scanner(System.in);
        int x = kb.nextInt();
        double y = kb.nextDouble();
        String s = kb.next();
        System.out.println(s + y + z);
    }
}
```

screen (input via keyboard)

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5. Write the following 2 Programs with Expressions and submit the source code.

a. (KeyboardInput.java) Write statements to put inside the main method that answer each of the following questions.
   i.   Create an int variable to store the number 7. Create a double to the same value as the int, converted to a double.
   ii. Create a Scanner variable (in order to read information from the keyboard). Read an int from the keyboard, and store it in a different variable. Read a String from the keyboard, and store it another different variable. Print both variables to the screen.
   iii. Read in two ints from the keyboard, and print the sum to the screen.

b. (TipCalculation.java) Develop a program to read in two numbers (i.e., one is the amount of restaurant bill and the other is the percentage of the tip) via keyboard.120 stands for $120.00 and 15 stands for 15% of tip. Then, the program will print the amount of tip. No need for GUI here.