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

## 1. Correct the following program (do not make any unnecessary change):

```
public class Welcome {
        public static void main (String args[])
        {
                System.out.print (“Welcome to CIS 1068”);
                System.out.println (”\”It\\’s fun to play\” ”);
        }
}
```

## 2. Check if the following names can be a valid variable name.

1. ( T ) a2
2. ( F ) 2a
3. ( F ) n\
4. ( F ) \n
5. ( T ) $2
6. ( F ) 2$
7. ( T ) a$
8. ( T ) $
9. ( F ) 2
10. ( F ) a=b

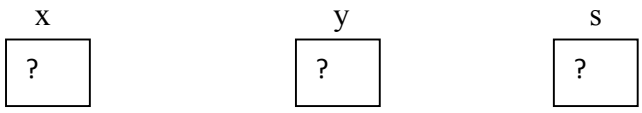
## 3. Check if the following statement is a valid assignment.

1. ( F ) 2 = a
2. ( F ) 2a = 2
3. ( F ) system.out.print = 1+ 4
4. ( T ) a = a
5. ( F ) a = a - * b
6. ( T ) a = a * - b
7. ( F ) a = 2b
8. ( F ) a + b = c
9. ( F ) - b = c
10. ( T ) a = b2

## 4. Understanding code

Draw what the computer's memory looks like at the end of each of these programs:

```
public class Expressions_Declarations {
        public static void main(String [] args) {
                int x;
                double y;
                String 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 |
|---|---|---|
| 8 | 6 | 7 |

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

| x | y |
|---|---|
| 3 | 0.0 |

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

| x |
|---|
| 3 |

```
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;
	}
}
```

| x | y | z |
|---|---|---|
| 3 | 0 | 1 |

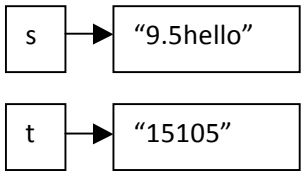
----Error

```
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;
	}
}
```

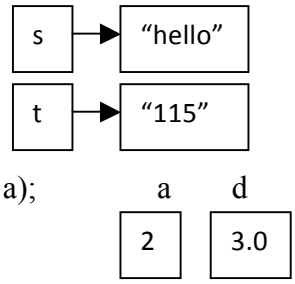
| x | y | z | a |
|---|---|---|---|
| 0.5 | 1.0 | 2.0 | 0 |

----Error

```
public class Expressions_StringConcatenations {
	public static void main(String [] args) {
		String s = "hello";
		String t = "115";
		s = s + 9.5;
		t = t + 10;
		t = t + "5";
	}
}
```

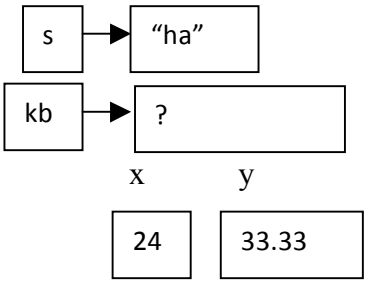



```
public class Expressions_WithPrintln {
	public static void main(String [] args) {
		String s = "hello";
		String t = "115";
		int a = 7 / 3;
		double d = 6.0 / a;
		System.out.println("what is a? " + a);
	}
}
```




```
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);

	}
}
```




----Error

## 5. Writing Java Programs with Expressions

a. 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.

```
int myInt = 7;
double myDouble = myInt;
```

ii. Create a Scanner variable. Read an int from the keyboard, and store it in a variable. Read a String from the keyboard, and store it in a variable. Print both variables to the screen.

```
Scanner keyboard = new Scanner(System.in);
int myAnotherInt = keyboard.nextInt();
String myAnotherStr = keyboard.next();
System.out.println(myAnotherInt);
System.out.println(myAnotherStr);
```

iii. Read in two ints from the keyboard, and print the sum to the screen.

```
int myInt1 = keyboard.nextInt();
int myInt2 = keyboard.nextInt();
System.out.println(myInt1 + myInt2);
```

b. 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 display the amount of tip.

```
Scanner keyboard = new Scanner(System.in);
double bill = keyboard.nextDouble();
double percentage = keyboard.nextDouble();
double tip = bill*percentage/100;
System.out.println("The amount tip is "+tip);
```

## 6. Exercises (Input, output, variable, assignment, calculation, string )

a. Slide 18

```
□□‖□          a        b        c
□□‖□\\
□□‖□'
□□‖□"""
```

```
System.out.println("/\\ //\\\\ ///\\\\\\\");
System.out.println("This program prints a \nquote from the Gettysburg Address.\n\n\"Four score
and seven years ago,\nour 'fore fathers' brought forth on this continent\na new nation.\"");
System.out.println("A \"quoted\" String is\n'much' better if you learn\nthe rules of \"escape
sequences.\"\n\nAlso, \"\" represents an empty String.\nDon't forget to use \\\" instead of \"
!\n'' is not the same as \"");
```

b. Slide 50

```
double i = 230857;
System.out.println((int)(i%10));
i = 658236489;
System.out.println((int)(i%10000));
i = 7342;
System.out.println((int)(i%100)/10);
i = 73.424;
```

```
        System.out.println((int)(i*100)/100.0);
        i = 73.425;
        System.out.println((int)(i*100)/100.0);
        i = 73.424;
        System.out.println((int)(i*100+.5)/100.0);
        i = 73.425;
        System.out.println((int)(i*100+.5)/100.0);
        i = 73.424;
        System.out.println(Math.round(i*100)/100.0);
        i = 73.425;
        System.out.println(Math.round(i*100)/100.0);
```

c. Slide 55

```
double test1_score = 95.1, test2_score = 71.9, test3_score = 82.6;
        System.out.println("Your grade on test 1 was "+test1_score);
        System.out.println("Your grade on test 2 was "+test2_score);
        System.out.println("Your grade on test 3 was "+test3_score);
        System.out.println("Your total points: "+(test1_score+test2_score+test3_score));
        System.out.println("Your average: "+(test1_score+test2_score+test3_score)/3.0);
```