Exam questions prepared by the CS101 assistants Serkan Bayraktar, Aykut Ünal, Dilek Demirel, and Sinan Uşşaklı.

1.What will be printed out if you attempt to compile and run the following code ?

```
int i=1;
for(int j=0;j<5;j=j+2)
{
        i=(i*i)+j
}
switch (i)
{
        case 3:
                System.out.println("zero");
                break;
        case 13:
                System.out.println("one");
        case 175:
                System.out.println("two");
        default:
                System.out.println("default");
}
```

ANSWER: one, two, default

2. What will be printed by the following code segment if the user enters 5 when prompted.

```
int n;
int F_0=1,F_1=1;
int F_n=0;
System.out.println ("Enter the number");
n=Keyboard.readInt();
for (int i=1; i<n; i++)
{
        F_n=F_0+F_1;
        F_0=F_1;
        F_1=F_n;
}
System.out.println (F_n);
```

ANSWER: 8

3. Complete the following code which takes a string that represents a binary number from the user, and converts this number to its decimal equivalent.

```
int decimal=0;
int power=0;

System.out.println ("Enter the binary number");
String binary=Keyboard.readString();

power=binary.length()-1;
for(int counter = 0; counter <binary.length(); counter++)
{
        if(bin.charAt(counter)=='1')
        {
                decimal = decimal + (int)Math.pow(2,power);
```

```
                power--;
        }
}

System.out.println( "string equiv of binary is: " + decimal);
```

ANSWER: The code is working properly in its current form.

4. Rewrite the following for loop using while statement, and find the value of the variable result after the code is run.

```
int inner=2, outer=2;
int result=0;

for (int i=0; i<outer; i++)
{
        for (int j=0; j<inner; j++)
        {
                result = (result*result)+1;
        }
}
```

ANSWER: result=26

```
int count=0;
result=0;
while (count<4)
{
        result = (result*result)+1;
        count++;
}
```

sample midterm questionns from dilek

1- How many times will the following program print "Hello"?

```
x = 3;
y = 10;
while (x < y)
  { System.out.println("Hello");
    x = x + 1;
    y = y - 1;
  }
```

answer = 4

2-
Which of the following is a statement of Java language?
(a)
    a==0
(b)
    int i,j;
(c)
    { i=i+1; j=j-1; }
(d)
    static int i;
(e)
    none of the above
    answer = c

3-
Write a Java method called PrintFrame that prints a frame of characters. This method should have a return type of void and have two integer parameters height and width that specify the size of the frame. If either parameter is 0 or negative, then no frame should be drawn.
For example, a call to the method of the form PrintFrame(7,5); would print the following frame.

```
#######
#     #
#     #
#     #
#######
```

PrintFrame.java includes two solutions

4-
Write a Java program (ie. a class that contains a main method) that does the following:
Prompt the user to enter an integer value **n**, and read the value.
Prompt the user to enter an integer value **d**, and read the value.
Check that **n>0** and **d** is in the range 0 to 9.
If the conditions are not satisfied, print an error message.

If the conditions are satisfied, then print the number of times the digit **d** occurs in the integer **n**. For example, given **n=134563**, and **d=3**, your program should print a message that says

The digit 3 occurs in 134563 2 times.

NumDigits.java includes two solutions
We may also erase some lines and promtp the students to fill in.

5-
Write a Java method that prompts the user for a positive integer n, then prints a table of all sums of the form i/n + j/n, where i and j are integers in the range [1 .. n]
For example, if the value provided by the user is 4, then the output will be
0.5 0.75 1.0 1.25
0.75 1.0 1.25 1.5
1.0 1.25 1.5 1.75
1.25 1.5 1.75 2.0

answer would be

```
   public static void table(){
      System.out.println("Please enter a positive integer");
      int n = Keyboard.readLineInt();
      for (int i = 1; i <= n; i++){
            for (int j = 1; j <= n; j++)
                  System.out.print((double)i/n + (double)j/n+" ");
            System.out.println();
      }
   }
```

6-
Show the output from the following Java method, assuming that it is called with the line:

```
compute_value(60);
public static int compute_value(int integer_value) {
// Declare Local Variables
boolean done = false;
int count = 1;
int current = integer_value + 2;
while (! done) {
      current = current / count;
      if (current % 3 == 0)
            done = true;
      else if (current < 1)
            done = true;
      else
            count += 1;
      System.out.println(current);
}
System.out.println(count);
return count;
} // method compute_value
```

answer :

```
62
31
10
2
0
5
```

1)
find and correct error(s) in the following
code segments
a)

```
int x = 1;
while(x <= 10);
        ++x;
```

answer)

```
int x = 1;
while(x <= 10);
        ++x;
```

b)

```
int k;
for(k == 1, k <= 10, ++k)
        System.out.println(k);
```

answer)

```
int k;
for(k == 1; k <= 10; ++k)
        System.out.println(k);
```

c)

```
int h = 2;
if(h = 2)
        ++h;
```

answer)

```
int h = 2;
if(h == 2)
        ++h;
```

d)
The following code should print the even numbers from
2 to 100:

```
int counter = 2;
Do{
        if(counter % 2 = 0)
                System.out.println(counter);

        counter += 2;
}While(counter < 100)
```

answer)

```
int counter = 2;
do{
        if(counter % 2 == 0)
                System.out.println(counter);

        counter += 2;
}while(counter < 100)
```

note: if veya while yapilarinin icinde mantic == yerine = kullanmak ogrencilerini labta sikca yaptiklari bir hata.

2)
What do runtime error, compile time error, and logical error mean? Explain the differences between them and give an example for each of these errors.
note: bence bunlar ogrencilerin sikca karistirdiklari kavramlar. Ornegin compiler hata vermezse programin dogru oldugunu falan iddia ederler ben tersini soylesen bile.
3)

What does the following program do?

```
import cs1.Keyboard;
public class sinav{
        public static void main(String args[]){
                System.out.println("enter first the integer");
                int y = Keyboard.readInt();
                System.out.println("enter second the integer");
                int x = Keyboard.readInt();
                for(int i = 1; i <= y; ++i){
                        for(int j = 1; j <= x; ++j)
                                System.out.print("#");
                System.out.println();

                }
        }
}
```

answer)
enter the first integer
3
enter the second integer
3
###
###
###

4)
Write the equivalent logical expressions of the following statements
a)
!(x < 5) && !(y >= 7)
answer)
(x>= 5) || (y < 7)

b)
!(a == b) || !(g != 5)
answer)
(a != b) || (g == 5)
c) !((i > 4) || (j <= 6))
answer)
(i <= 4) && (j > 6)

1.

```
class sinav1
{
	public static void main(String[] args)
	{
		double count;
		int limit;
		count = 9.0;
		limit = 43/4;
		for (; count <= limit; count = count + 0.5)
		{
			System.out.println("in for:" + count);
		}
		System.out.println("after for" + count);
	}
}
/*
What will it print?

Answer:
in for:9.0
in for:9.5
in for:10.0
after for10.5

*/
```

2.

```
class sinav2
{
	static int value = 10;
	public static void main(String[] args)
	{
		System.out.println("Main before p1: " + value);
		value = p1(value);
		System.out.println("Main before p2: " + value);
		value = p2(value);
		System.out.println("Main at the end: " + value);
		System.out.println("-----");
		int value = 30;
		System.out.println("Main before p1: " + value);
		value = p1(value);
		System.out.println("Main before p2: " + value);
		value = p2(value);
		System.out.println("Main at the end: " + value);

	}
	static int p1(int input)
	{
		value = input * value;
		System.out.println("In p1: " + value);
		return value;
	}
	static int p2(int input)
	{
		int value = 5;
		value = input / value;
		System.out.println("In p2: " + value);
		return value;
	}
}
/*
What will it print?

Answer:
In p1: 100
```

```
Main before p2: 100
In p2: 20
Main at the end: 20
-----
Main before p1: 30
In p1: 600
Main before p2: 600
In p2: 120
Main at the end: 120
*/
```

3.

```
class sinav3
{
	public static void main(String[] args)
	{
		int value = 5;
		int value2 = 1;
		while (value2 < 4)
		{
			for (;value >= value2; value--)
			{
				System.out.println("*");
			}
			value2++;
		}
	}
}
/*
How many stars will it print?

Answer:
5

Note:
The value2 is for fooling, it has no use for printing, as value decreases to
limit of for loop and never increases.
*/
```

4.

```
class sinav4
{
	static boolean a,b,c;
	public static void main(String[] args)
	{
		a = true;
		b = false;
		c = false;
		System.out.println(a + ", " + b + ", " + c);
		do
		{

			if (b == c)
				b = a;
			else if (a == c)
				b = c;
			else
				a = c;
			System.out.println(a + ", " + b + ", " + c);
		}
		while ( a || b || c);
	}
}
/*
Does the program has infinite loop? If so write first 5 lines of output.
If not what will it print?
```

```
Answer:
No infinite loop.

true, false, false
true, true, false
false, true, false
false, false, false
*/
```

5.

```
class sinav5
{
	public static void main(String[] args)
	{
		int one =  /* type a value here */;
		int two = /* type a value here */;
		int three =  /* type a value here */;

		do
		{
			one++;
			System.out.print("cart");
		}
		while ( one < 3);
		for (int i = 0; i < two; i++)
		{
			System.out.print("o");

		}
		while (true)
		{
			three++;
			if (three == 5)
			{
				break;
			}
			System.out.print("n");

		}
	}
}

/*
What values must we enter to the marked points in order to have this program
to print:

cartoon

Answer:
one = 2;
two = 2;
three = 3;

Note: We may even delete the variable names, and ask them to type in the
variable names.
*/
```