Homework 2 Part 1

CS 1323, Fall 2015

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This homework is due on Monday, September 28 by 11:59 p.m. You must submit homework in a **PDF file** online to the dropbox on Janux. Please make sure that the formatting of the file is appropriate (no empty pages, pages with single words or excessive indentation or large spaces between lines). If you are using Open Office or Star Office, please check to be sure that the figures and diagrams in your PDF file are properly formatted, as this is a common problem with these products.

1. (5 points; 1 point for a), 2 points for b), 2 points for c)) Trace the execution of the following statements by filling in the tables to the right of the statements. The tables may contain too many or too few lines.

   a.
   ```
   int x = 7;
   if (x > 5)
       x = 14;
   else
       x = 21;
   ```

x
7
14

   b.
   ```
   int a = 9;
   int b = 5;
   if (a==b)
       b = a+2;
   else if (a < b)
       b = b + 2;
   else
   {
       b = a + 1;
       a = b + 1;
   }
   ```

a	b
9	5
11	10

c.
```
int size = 3;
int width = 2;
if (size < 5)
{
    width = width * 5;
    size = 5;
}
else if (size == 3)
{
    width = width * 4;
    size = 5;
}
else if (size == 5)
{
    width = width * 3;
    size = 9;
}
else
{
    width = width * 2;
    size = 10;
}
```

size	width
3	2
5	10

2. (16 points; 4 points each) Trace the following while loops by filling out the table at the right. The table may contain too many or too few lines. If the loop is an infinite loop, trace the first three iterations and write "infinite loop" below.

a.
```
int count = 4;
while (count <=8)
{
    count = count + 1;
}
```

count
4
5
6
7
8
9

b.
```
int sum = 0;
int count = 10;
while (count >= 6)
{
    sum = sum + count-1;
    count = count - 2;
}
```

sum	count
0	10
9	8
16	6
21	4

c.
```
int sum = 10;
int count = 4;
while (count  > 8)
{
    count = count + 2;
    sum = sum + count;
}
```

sum	count
10	4

d.
```
int count = 0;
int size = 1;
while (size < 14)
{
    size = size * count;
    count = count + 1;
}
```

count	size
0	1
1	0
2	0
3	0

INFINITE LOOP

3. (10 points; 5 points for a), 1 point each for b) to f)) Suppose that we have executed the following statements in a program.

String date= new String (“September”);

String anotherDate = date;

String newDate = new String(“SEPTEMBER”);

String otherDate= new String (“SEPTEMBER 9 2015”);

a. Draw a memory diagram of the code above. The heap is on the right. Assume that four characters fit in each address.

Main stack frame

Identifier	**Address**	**Contents**
date	100	1000
anotherDate	101	1000
newDate	102	1003
otherDate	103	1006

Heap

Identifier	**Address**	**Contents**
Date	1000	Sept
	1001	embe
	1002	r
newDate	1003	SEPT
	1004	EMBE
	1005	R
otherDate	1006	SEPT
	1007	EMBE
	1008	R 20
	1009	15
	1010	
	1011	
	1012	

Give the value (either true or false) of each of the statements

b. date == anotherDate
   - True

c. date.equals(anotherDate)

- True

d. date.equalsIgnoreCase(otherDate)
   - False
e. newDate.equals(otherDate)
   - False
f. newDate == anotherDate
   - False