CS 125 - Lecture 16

Objectives: Multidimensional arrays; hexadecimal values

Neighbor? Describe the selection sort algorithm?

4. **What will be the final contents of 'myarray'?**

```
String mesg = "Vewol Swap";
char[] myarray = mesg.toCharArray();

for(int i=0;i< myarray.length; i++) {
  if( myarray[i] =='o') myarray[i]='e';
  if( myarray[i] =='e') myarray[i]='o';
}
```

5. **Nested loops**

```
int[] a = {7,5,2,...};
int[] b = {9,3,8,2,...);
```

Print all of the numbers in unsorted array b that are **not** in unsorted array a.

1. **Complete the function that returns true iff at least half the entries are positive.**

```
public static boolean positive(double[] data)
{


   for (int i=0; i< data.length; i++) {



   }



}
```

2. **Returns true if there are at least 6 examples where the next array cell is twice the value as the previous one.**

e.g. count ({1, 2, 4, 8 , 9, 3, 6, 0, 0, -1, -2 }) will return true.

```
public static boolean count(int[] data) {
   int result = 0;

   for(int i =0; i < ________; i=i+1)
      {

      if( ____________________________)
          result = result +1;



// don't forget the return statement
```

3a. **What are the values of the array after the following code completes?**

```
// y = row, x = column, assume h = 5

for(int y=0; y < h; y++)
   for(int x = 0; x< h; x++) {

      if( x + y == h)
          A[y][x] = (char)('0' + x%2);
      else
          A[y][x] = ' ';

      A[4-y][0]='?';
  }
return A;
```

3b. **Add just one more loop to change all of the outer border cells to be '*'**

6. **Carefully execute the following code by hand and note the variables values as they change.** (i) Determine the final value of each variable. (ii) Determine what the code does.

i:	j:	count:
result:		

```
int[] arr1 = {10, 20, 30, 40}; //sorted values
int[] arr2 = {18, 20, 25, 99}; //sorted values
int[] result = new int[arr1.length];
int i=0,j=0,count=0;
while (i<arr1.length) {
   if(arr2[j] < arr1[i]) j++;
   else if(arr2[j] == arr1[i]) i++;
   else {  // must be true that arr2[j] > arr[i]
      result[count] = arr1[i];
      i++; count++;
   }
}
```

7. **What do the following do? Fix any syntax errors you notice.**

```
new int[6];

new int[6] { 1,2,3,4,5,6 };

int[] a = {1,3,5,7,9,11};

int[] b=null;

b=a;

char[100] myvariable = new char[100];

int len = myvariable.length();
```

7. **What will the following print exactly?**

```
for(int x =3; x<=12; x = x*2) {
   for(int y=x; y>0; y--) TextIO.put("x");
   TextIO.putln();
}
```

8. **Merge…**
Complete the following code to merge two sorted integer arrays together into a single output array

.

```
public static int[] merge(int[] A, int[] B) {
   int done = 0;
   int countA = 0;
   int countB = 0;
   int[] result = new int[_____________________________];
   while ((countA < A.length) ____ _____________________) {
      if (_____________________]) result[done++] = A[ countA++];
      else
         result[_______] = B[ __________];
 }
while (countA < A.length)
   result[done++] = A[countA++];
```

6. **Merge…**

Complete the following code to merge two sorted integer arrays together into a single output array

```
public static int[] merge(int[] A, int[] B) {
   int done = 0;
   int countA = 0;
   int countB = 0;
   int[] result = new int[_____________________________];
   while ((countA < A.length) ____ _____________________) {
      if (_____________________]) result[done++] = A[ countA++];
      else
         result[_______] = B[ __________];
   }
while (countA < A.length)
   result[done++] = A[countA++];
```

7. **What do the following do? Fix any syntax errors you notice.**

```
new int[6];
new int[6] { 1,2,3,4,5,6 };
int[] a = {1,3,5,7,9,11};
int[] b=null;
b=a;
char[100] myvariable = new char[100];
int len = myvariable.length();
```

7. **Love…**

Complete the following code to print out a random love letter. Choose a random phrase from each string array.

```
public static void main(String[] args) {
   String [][] letter = {
         {"Hi", “Dear","Dearest"},
         {“Mike,","Jenny,","sugar,","sweetheart,"},
         {“\n"},
         {"I can no longer","I want to","I need to”},
         {"think","swim","break up","sing country music”},
         {"for you.","with you.","about you.”},
         {“\n"},
         {"Bye,","Your loving friend,”},
         {“\n”},
         {“Jenny","Jim"}
     };
```

8. **Using 2D arrays to represent an image.**

Create a picture of the JVMs memory and use memory pointers to explain why the following code swaps two rows.

```
int[][] pixels;
pixels = new int[480 /*row or 'y' coordinate*/][640 /* column or 'x'];
//  initialize pixel array : Odd rows are black.
//  Even rows are white
for(int y=0;y< 480; y++)
   for(int x = 0; x< 640; x++)
      if(y % 2 ==0) pixels[___][____] = 0xffffff;

//0xfffff = all white (red=255,green=255,blue=255)
int[] temp = pixels[10];
pixels[10] = pixels[11];
pixels[11] = temp;
```