Montgomery College, CMSC 203
Worksheet 1
Module 10

Objectives

- Introduction to Arrays
- Processing Array Contents

Concept Questions

1. What does the following statement do?

```
double[] array1 = new double[10];
```

a. Declares array1 to be a reference to an array of double values
b. Creates an instance of an array of 10 double values
c. Will allow valid subscripts in the range of 0 - 9
d. All of the above

ANS: D

2. It is common practice to use a _____ variable as a size declarator.

a. `static`
b. reference
c. `final`
d. boolean

ANS: C

3. What do you call the number that is used as an index to pinpoint a specific element within an array?

a. subscript
b. global unique identifier
c. element
d. argument

ANS: A

4. Subscript numbering always starts at what value?

a. 0
b. 1
c. -1
d. None of the above

ANS: A

5. (TRUE/FALSE) Declaring an array like this `int[]days` and like this `int days[]` is correct.

ANS: TRUE

6. What will be the results of the following code?

```
final int ARRAY_SIZE = 5;
double[] x = new double[ARRAY_SIZE];
for(int i = 1; i <= ARRAY_SIZE; i++)
{
   x[i] = 10.0;
}
```

a. All the values in the array are initialized to 10.0
b. All the values, except the first, are set to 10.0
c. An error will occur when the program runs.
d. There will be a compilation error

ANS: C

7. Each array in Java has a public field named _____ that contains the number of elements in the array.

a. `size`
b. `capacity`
c. `length`
d. `limit`

ANS: C

8. What would be the results of the following code?

```
int[] x = { 55, 33, 88, 22, 99, 11, 44, 66, 77 };
int a = 10;
if(x[2] > x[5])
  a = 5;
else
  a = 8;
```

a. a = 5
b. a = 8
c. a = 10
d. This is a compilation error, you cannot compare array elements

ANS: A

9. What would be the results after the following code was executed?

```
int[] x = {23, 55, 83, 19};
int[] y = {36, 78, 12, 24};
for(int a = 0; a < x.length; a++)
{
  x[a] = y[a];
  y[a] = x[a];
}
```

a. `x[] = {36, 78, 12, 24}` and `y[] = {23, 55, 83, 19}`

b. `x[] = {36, 78, 12, 24}` and `y[] = {36, 78, 12, 24}`
c. `x[] = {23, 55, 83, 19}` and `y[] = {23, 55, 83, 19}`
d. This is a compilation error
ANS: B

10. The following array has been initialized:
```
int[]days = {31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};
```
What numbers are stored in these indexes:
`days[0]`=? (31)
`days[1]`=? (28)
`days[12]`=? (Error)
`days[10]`=? (30)

11. What will be the value of `x[8]` after the following code has been executed?
```
final int SUB = 12;
int[] x = new int[SUB];
int y = 100;
for(int i = 0; i < SUB; i++)
{
   x[i] = y;
   y += 10;
}
```
a. 170
b. 180
c. 190
d. 200
ANS: B

12. The following array has been initialized:
```
int[]days = {31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};
```
Using an enhanced for loop, print every element of the array
```
for(int d : days){
     System.out.println(d);
}
```

13. What will the following code output?
```
int[]days = {31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};
int[]month = {1 ,2, 4, 5};
days = month;
for(int d : days){
     System.out.println(d);
}
```
ANSW: 1245

Programming Questions

1. Create the following program:
   - Prompt the user to enter array size.
   - Create an array with the specified size.
   - Prompt the user to enter a number for every element of the array
   - Output the array

This is an example of what the output should look like:

```
Enter array size:
5
Enter element [0]: 1
Enter element [1]: 2
Enter element [2]: 3
Enter element [3]: 4
Enter element [4]: 5
Here is the entered array: [1 2 3 4 5 ]
```

ANSWER:

```
import java.util.Scanner;
public class Main {

	public static Scanner sc = new Scanner(System.in);
	public static void main(String[] args) {
		System.out.println("Enter array size: ");
		int size = sc.nextInt();

		int [] arr = new int[size];

		for(int i = 0; i < arr.length; i++){
			System.out.print("Enter element [" + i + "]: ");
			arr[i] = sc.nextInt();
		}

		System.out.print("Here is the entered array: [");
		for(int i : arr){
			System.out.print(i + " ");
		}
		System.out.println("]");
	}
}
```

2. Write the following program:
   - Prompt the user to enter the size of the array.
   - Create two arrays called `arr` and `reversedArr`.
   - Prompt the user to enter every element of array `arr`.
   - Write code that puts values from array `arr` into `reversedArr` in reverse order
   - Output the `reversedArr`.

This is an example of the program output:

```
Enter array size:
5
Enter element [0]: 1
```

```
Enter element [1]: 2
Enter element [2]: 3
Enter element [3]: 4
Enter element [4]: 5
Here is the reversed array: [5 4 3 2 1 ]
```

ANSWER

```java
import java.util.Scanner;
public class Main {

	public static Scanner sc = new Scanner(System.in);
	public static void main(String[] args) {
		System.out.println("Enter array size: ");
		int size = sc.nextInt();

		int [] arr = new int[size];
		int [] reversedArr = new int[size];


		for(int i = 0; i < arr.length; i++){
			System.out.print("Enter element [" + i + "]: ");
			arr[i] = sc.nextInt();
		}

		for(int i=0; i < arr.length; i++){
			reversedArr[arr.length - 1 -i] = arr[i];
		}

		System.out.print("Here is the reversed array: [");
		for(int i : reversedArr){
			System.out.print(i + " ");
		}
		System.out.println("]");

	}
}
```