

Java Genesis Chapter 6

Quick Quiz

Question 1

Consider the following method:

```
public static int multBy2 (int x) {  
    return 2*x;  
}
```

We can describe this method in the following simple and informal way:

takes an integer x and returns an integer value equal to twice the value of x .

In the same spirit, give a simple and informal description of each of the following methods.

- (a)

```
public static double m1 (int x, int y) {  
    return (x+y)/2.0;  
}
```
- (b)

```
public static boolean m2 (int x) {  
    return x%5 == 1 && x%7 == 2;  
}
```
- (c)

```
public static void m3 (int [] x) {  
    for (int i=x.length-1; i>=0; i=i-1)  
        System.out.println(x[i]);  
}
```
- (d)

```
public static int m4 (int [] x, int y) {  
    if (y<0) return x[0];  
    if (y>=x.length) return x[x.length-1];  
    return x[y];  
}
```

- (e)

```
public static boolean m5 (int [] x) {
    int i = 0;
    int j = x.length-1;
    while (i < j) {
        if (x[i] != x[j]) return false;
        i = i+1;
        j = j-1;
    }
    return true;
}
```
- (f)

```
public static boolean m6 (int [] x) {
    if (x.length <= 1) return true;
    if (x[0] != x[x.length-1]) return false;
    int [] y = new int [x.length-2];
    for (int i=0; i<y.length; i++) y[i] = x[i+1];
    return m6(y);
}
```

Question 2

The method `equal` takes two integer arrays `x` and `y` and returns `true` if and only if the arrays are identical:

```
public static boolean equal (int [] x, int [] y) {
    // code for the method is missing
}
```

Which of the following options can correctly be substituted as the missing code for this method? You may assume that the arrays `x` and `y` have the same length.

- (a)

```
boolean b = true;
for (int i=0; i<x.length; i++)
    b = b && x[i] == y[i];
return b;
```
- (b)

```
boolean b = false;
for (int i=0; i<x.length; i++)
    b = b || x[i] != y[i];
return !b;
```
- (c)

```
for (int i=0; i<x.length; i++)
    if (x[i] == y[i]) return true;
return false;
```

- (d)

```
for (int i=0; i<x.length; i++)
    if (x[i] != y[i]) return false;
    else return true;
return true;
```
- (e)

```
for (int i=0; i<x.length; i++)
    if (x[i] != y[i]) return false;
return true;
```
- (f)

```
boolean b = false;
for (int i=0; i<x.length; i++)
    if (x[i] == y[i]) b = true;
return b;
```
- (g)

```
int i = 0;
while (i<x.length && x[i] == y[i]) i++;
if (i==x.length) return true;
return false;
```
- (h)

```
boolean b = true;
int i = 0;
while (b && i<x.length) {
    b = x[i] == y[i];
    i++;
}
return b;
```
- (i)

```
if (x == y) return true;
else return false;
```
- (j)

```
boolean b = true;
for (int i=0; i<x.length; i++)
    if (x[i] != y[i]) b = false;
return b;
```
- (k)

```
if (x.length == 0) return true;
int [] u = new int [x.length-1];
int [] v = new int [x.length-1];
for (int i=0; i<u.length; i++) {
    u[i] = x[i+1];
    v[i] = y[i+1];
}
return x[0] == y[0] && equal(u, v);
```

Question 3

What is printed in the Output window when the class Test below is compiled and run?

```
public class Test {  
  
    public static void main (String [] args) {  
        int x = 2;  
        int y = 3;  
        int [] z = {1, 4};  
        modify(x, y, z);  
        System.out.print(x+" "+y+" "+z[0]+" "+z[1]);  
    }  
  
    public static void modify (int x, int y, int [] a) {  
        x = a[0];  
        y = a[1];  
        a[0] = y;  
        a[1] = x;  
    }  
}
```

Question 4

What is printed in the Output window when the class Sum below is compiled and run?

```
public class Sum {  
  
    public static void main (String [] args) {  
        int [] a = {3, 2, -1, 4};  
        System.out.print(sum(a));  
    }  
  
    public static int sum (int [] x) {  
        while (x.length > 1) {  
            int [] y = new int [x.length-1];  
            for (int i=0; i<x.length-2; i++) y[i] = x[i+1];  
            y[x.length-2] = x[0] + x[x.length-1];  
            x = y;  
        }  
        return x[0];  
    }  
}
```