

Quiz

This work complies with the JMU Honor Code.

Name: _____ Signature: _____

1. What would be returned by the following function if it were passed an array containing the values {5, 4, 7, 2}?

```
/**
 * Calculate the mean of a population
 *
 * @param data    The population
 */
public static double mean(double[] data)
{
    double    result;    // The result (to be returned)
    double    total;     // The sum of all of the values

    total = 0;

    // Calculate the sum
    for (int i=0; i<data.length; i++)
    {
        total += data[i];
    }

    // Calculate the mean
    if (data.length < 0) result = Double.POSITIVE_INFINITY;
    else                 result = total / data.length;

    return result;
}
```

2. Briefly describe the purpose of the above function.

3. What would be returned by the following function if it were passed an array containing the values {5, 4, 7, 2}?

```
public static double[] r(double[] d)
{
    // Declare one of the values
    double one;
    int fish = 1;
    double                two = d[0]; // Declare the other value

    /*
     * Initialize
     */
    one = d[0];
    while (fish
< d.length)
    {

        if (d[fish] < two)
        {
            two = d[fish];
        }

        if (d[fish] > one)
one = d[fish];

        fish = 1 + fish;          // Update
    }

    double[] c;
        c = new double[2];
    c[0] = two;
        c[1] = one;

    return c;
}
```

4. Briefly describe the purpose of the above function.

5. Given the following `standardDeviation()` function and the `mean()` function above, describe how the two are related.

```
/**
 * Calculate the standard deviation of a population
 *
 * @param data    The population
 */
public static double standardDeviation(double[] data)
{
    double    result;    // The result (to be returned)
    double    ssd;       // The sum of the squared deviations
    double    xbar;      // The mean of the population

    xbar = mean(data);
    ssd  = 0;

    for (int i=0; i<data.length; i++)
    {
        ssd += Math.pow((data[i]-xbar) , 2.0);
    }

    // The standard deviation is the square root of the ssd/n
    result = Math.sqrt(ssd/data.length);

    return result;
}
```

6. Given the following `difference()` function and the `r()` function above, describe how the two are related.

```
public static double difference(double[] d)
{
    double a = e = d[0];
    int i = 1;

    while (i < d.length)
    {
        if (d[i] < e) e = d[i];
        if (d[i] > a) a = d[i];

        i = 1 + i;
    }

    return e - a;
}
```