Programming Fundamentals II Sec. 600

Assignment #7

Due date: 8/1/22 at 11:59 pm

1. (40 points) Briefly define (one to two sentences) each of the following five terms.

1. Recursive method (recursion)

*Methods that call themselves*

1. Base case

*Minimal problem that is trying to be solved. Ends recursion*

1. Recursive case

*Smaller recursive problem that requires a recursive call*

1. Fractal

*Geometric figures that can be formed or constructed with recursion. Can be divided into parts, each of which is a reduced size copy of the whole*

1. Tail recursion

*Recursive call must be the last operation in the method. Can help with performance issues that come with recursion*

2. (30 points) Briefly explain how recursion is used to solve problems. Include a description of both the base case and recursive case in your explanation.

*Recursion is used to solve problems allowing methods to call themselves to get a desired outcome.*

*The base case is for solving a minimal problem like providing a parameter in which recursion can occur. This was used in the recursive demo with the if statement.*

*if (n > 0) {*

*Recursion will continue to happen as long as the method n is greater than 0.*

*In a recursive case, a smaller problem is solved that requires a recursive call. In the same program we used the following recursive case;*

*Greeting(n-1);*

*This case uses the recursive call to lead the recursion to an end.*

3. (30 points) How does tail recursion help address some of the disadvantages of a recursive approach over an iterative approach?

*One disadvantage of using the recursive approach is the high memory usage and requirements. Recursion is ideal to intuitive and clear solutions.*