* + - 1. Can "this" be used within a static method? No.
      2. Can multiple catch blocks be executed? Not for the same try.
      3. Explain Anonymous Types. Anonymous types allow you to encapsulate read only properties into an object without defining the type. A convenient (if lazy) way to load a lot of data from a query into one object.
      4. How do you implement an interface? You make a class that implements the members of the interface.
      5. How do you inherit a class? You extend the parent or base class. The child class is the parent class with more. “class childClass : parentClass”
      6. List some exceptions? Divide by zero, array out of bounds, object out of scope.
      7. List two different types of errors? Expected terminator (e.g ), ;, }). Cannot implicitly convert type.
      8. What are differences between the different looping statements? Do while executes the block at least once, and until the specified expression is false. While executes if/while the specified expression is true. For executes the code block until a counter comparison returns false with a set increment. A foreach executes once for each element in an object.
      9. What are Generics? Generics allow you to defer type specification until declaration and instantiation. Primarily used with collections.
      10. What are reference types? Data types which contain a reference to data rather than the actual data. When reference types are passed as arguments to methods the refence value is passed. Example an array is a reference type.
      11. What are the Access Modifiers?   
          Public: Access is not restricted.  
          Protected: Access is limited to the containing class or types derived from the containing class.  
          Internal: Access is limited to the current assembly.  
          Private: Access is limited to the containing type.
      12. What are the Collection types?  
          Sets, Lists, Dictionaries, Hash Tables, Queues, Bags, Queues.
      13. What are the Comment types?  
          Multiline, Single Line, XML.
      14. What are the differences between an if and a switch statement?  
          An if statement evaluates a single code block depending on single Boolean statement. A switch has a single value it checks against one or more cases for equivalence for which it executes the corresponding code block if equivalence is determined for the case.
      15. What are the looping statements? Describe when each would be used.  
          While: used when a block of code may need to be executed and repeated until a Boolean expression evaluates to true.  
          Do-While: used when a block of code will need to be executed at least once and repeated until a Boolean expression evaluates to true.  
          For: used when a code block needs to be repeated a number of times controlled by a counter.  
          Foreach: used when a code block needs to be executed for each element in a collection or array.
      16. What are the primitive data types? object, int, char, bool, short, float, and double.
      17. What are value types? Types that only contain values for their type. Example int can only contain integers, bool can only contain a Boolean, etc.
      18. What happens if the inherited interfaces have conflicting method names? The inherited method will be hidden and if the hidden keyword is not used the compiler will throw a warning.
      19. What is a Class? An object type that can contain it’s own members and methods.
      20. What is a Constructor? A special method that is responsible for instantiating a class.
      21. What is a Hashtable? A collection of key value pairs organized by hash values.
      22. What is a Namespace? Used for organizing the .NET framework classes and for controlling scope in software projects.
      23. What is an Abstract Class? A class that cannot be instantiated and instead is intended to be inherited from. It can be incomplete in that implementation is allowed but not required for any methods or members. Only one abstract class can be inherited from.
      24. What is an Array? An indexed container of a specified object, similar to a list but with a constant size determined at instantiation.
      25. What is an Enum? A set of named constants. The default first enumerator value is 0 but it can be overridden.
      26. What is an Interface class? A class with no implementations that provides a signature. Multiple interfaces can be inherited from. An interface cannot have fields and only abstract methods.
      27. What is an Object? The base type from which all else in C# is derived.
      28. What is Boxing and Unboxing? Boxing is converting a value type object to an object of the object type and is implicit. Unboxing is converting an object of the object type to a value type and is explicit. E.g. int i = 123; object o = i; o = 123; i = (int)o;
      29. What is Data Encapsulation? The practice of wrapping one or more objects in a package. Primarily done in classes through the use of the public, private, protected, and internal access specifiers.
      30. What is dependency injection? The practice or writing code in such a way that required objects are passed at runtime rather than at compile time to reduce cross object dependencies and improve reusability.
      31. What is method overloading? Having multiple methods with the same name but different parameters that allow for multiple ways to call the methods by the same name but pass different arguments for different results.
      32. What is Multithreading? It is splitting the execution path of your code into multiple execution paths (threads) that take advantage of parallel processing hardware.
      33. What is polymorphism? The principal of class inheritance/extension that dictates a child class is also an object of the parent class and has access to the methods/members of the parent class.
      34. What is the base class from which all the classes are derived? The Object class.
      35. What is the difference between “continue” and “break” statements? Continue will jump straight to the Boolean evaluation of the current code block or loop, break will exit the code block or loop regardless.
      36. What is the difference between Array and Arraylist? An array has a constant size defined when instantiated, an Arraylist is the precursor to the List type and functions as a linked list allowing it’s size to be increased and decreased.
      37. What is the difference between Static and Instance Members/Methods?  
          How they are called. Static methods must be called directly, either through the class itself if used outside the class in which it is defined, or directly inside the class. Instance members and methods are referenced through the instance of the class/object.
      38. What is the use of using statement? It allows the use of classes/methods/members of a namespace within code without explicitly referencing the namespace.
      39. What is variable scope? The containers in which a variable lives defines the scope for the variable. Example: an int defined inside an if block only exists inside the if block.
      40. Why use “finally” block? To always execute a section of code in a try catch block.

All assignments will be developed in individual **methods**.

1. Given an array of integers find the largest, smallest average.
2. Given an array of integers find the second largest and the second smallest.
3. Given an array of integers return the total of all values.
4. Given an array of integers return count of numbers > some value.
5. Given an array of strings find the longest string.
6. Given a string create an array of the words in the string.
7. Given a number print a square with that as the length and width of the sides.  
   \* \* \* \* \* \* int side = 6;  
   \* \*  
   \* \*  
   \* \*  
   \* \*  
   \* \* \* \* \* \*
8. Given a number print a tree shape.  
    \* int howTall = 4;  
    \*\*\*  
    \*\*\*\*\*  
    \*\*\*\*\*\*\*
9. Given a string convert to an array words print words within a box.  
   \*\*\*\*\*\*\*\*\* String str = “Let’s do this!;  
   \* Let’s \*  
   \* do \* // create word array to determine number of rows  
   \* this! \* // find the longest string to determine width  
   \*\*\*\*\*\*\*\*\*
10. Given a string with a person’s name return a string of their initials
11. Given two numbers, find the largest, print the numbers from max to min.
12. Given a string print the individual characters front to back and back to front.
13. Given a string reverse it..ti esrever gnirts a neviG
14. Given a string capitalize each word and print out.
15. Create an Enum class for the Planets in the Solar System.
16. Given a Planet return the distance from the Sun. (Use your Planet Enum)
17. Create a Class for a Shoe. Must have at least 4 properties.
18. Create a base class with 3 properties, create a child class from that base class
19. Given a temperature return the type of clothing you should wear.
20. Given a distance in miles convert to kilometers.
21. Given a number calculate the date that many days in the future.
22. Loop 0 to 100, print Fizz if divisible by 3, Buzz if divisible by 5 and # otherwise
23. Find the sum of all the multiples of 3 or 5 below 1000.
24. Given two coordinates {x1, y1} and {x2, y2} what is the distance between them
25. Give the center coordinate of a circle {x, y} and the radius r, determine if a point {x1, y1} is inside the circle. (distance from x,y is < r)
26. Read a file from your hard drive and print the contents