1 Syntax

1.1 Task

Create a program to find all the factors of any positive integer.

Example

```
Input: 12
Output: 1, 2, 3, 4, 6, 12

Input: 7
Output: 1, 7

Input: 16
Output: 1, 2, 4, 8, 16
```

1.2 Task

Expand the program to calculate the highest common factor between two numbers

Example

```
Input: 12, 16
Output: 4

Input: 7, 15
Output: 1
```

1.3 Notes

This session focused on becoming comfortable with syntax. You should be comfortable with the correct syntax for classes, methods, fields, and other members.

Creating a class

```
1 public class MyClass {
2     ...
3 }
```

Creating properties

```
1 public class MyClass {
2     public int MyProperty { get; set; }
3 }
```

Creating fields

```
public class MyClass {
    private int MyField;
}
```

You should also be comfortable calling methods and refering to variables and properties in the code, as well as declaring variables.

Declaring variables

```
public class MyClass {
  public static int AddNumbers(int first, int second) {
    var result = first + second;
    return result;
  }
}
```

We also looked at creating Lists and looping through lists.

Creating a list and adding items to it

```
public class MyClass {
  public static List<int> GetNumbersFrom1To5() {
    // Make list
    var numbers = new List<int>();

    // populate list with values
    numbers.Add(1);
    numbers.Add(2);
    numbers.Add(3);
    numbers.Add(4);
    numbers.Add(5);

    // return list to the caller of this method
    return numbers;
  }
}
```

Looping over a list

```
public class MyClass {
  public static void PrintAllInList() {
    var numbers = GetNumbersFrom1To5(); // method from above
    foreach(var number in numbers) {
      Console.WriteLine(number);
    }
  }
}
```

2 Object oriented programming

2.1 Task

Create a program to store detals about school courses, and list them all, when requested.

Example

```
Input: 1

Output:
1. List all courses
2. Search for student

All Courses:
    Core:
        Astronomy
        Charms
        Defence Against the Dark Arts
        Flying
        Herbology
        History of Magic
        Potions
        Transfiguration

    Optional:
        Alchemy
        Apparition
        Arithmancy
        Care of Magical Creatures
        Divination
        Study of Ancient Runes

    Extra Curricular:
        Advanced Arithmancy Studies
        Ancient Studies
        Magical Theory
        Orchestra
```