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# IT2154 Tutorial 4: Functional, Declarative Programming in C#

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## Question 1

Consider the following C# program

```
public class Product{
    public int Id {get; set;}
    public string Name {get; set;}
    public int Qty {get; set;}
}

public static void Main(string[] args) {
    var stock = new List<Product>();
    stock.Add(new Product() {Id=1, Name="apple", Qty=100});
    stock.Add(new Product() {Id=2, Name="orange", Qty=10});
    var to_be_restock = CheckStock(stock);
}

public static List<int> CheckStock(List<Product> ps) {
    var to_be_restock = new List<int>();
    foreach (var p in ps) {
        if (p.Qty <= 10) {
            to_be_restock.Add(p.Id);
        }
    }
    return to_be_restock;
}
```

- (a) Rewrite the `CheckStock` function in functional programming style using Linq method syntax.
- (b) Rewrite the `CheckStock` function in functional programming style using Linq query syntax.

## Question 2

List the advantages and disadvantages of using Linq for database query.

## Question 3

Consider the following MVC Core Model in C#,

```
class Book {  
    public string Id {get; set;}  
    public string Title {get; set;}  
    public string Author {get; set;}  
    public string ISBN {get; set;}  
}
```

Assume that we have registered it with a EF Core data context `_context`, using C# Linq, perform the following operations

1. insert a book record with
  - title: "Innovative Technologies for Market Leadership: Investing in the Future"
  - author: "Glauner and Plugmann"
  - ISBN: "978-3-030-41308-8"
2. query the book based on the ISBN "978-3-030-41308-8"
3. delete the book with ISBN "978-3-030-41308-8"