## Part 1

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### **Question 1: Runtime Environment Analyzer**

Create a **Console Application** that prints information about
the current runtime environment.

**Requirements:**

1. Print:

    - .NET runtime version

    - Operating System

    - CPU Architecture

2. Based on the runtime:

    - If `.NET Core / .NET` → Print: `"Modern .NET Runtime"`

    - Otherwise → Print: `"Legacy Runtime"`

3. Use:

    - `Environment`

    - `RuntimeInformation`

    - `switch expression`

     لو عايزين تبحثوا عن جزء من كلمة في الـ `switch`، مش ممكن تعملوا match
كله على الـ string.
استخدموا الصياغة:
case string r when r.Contains("الكلمة"):
```

```
### **Question 2: Feature Toggle System**

Design a simple feature toggle system.

**Features:**

- Login

- Export

- AdminPanel


Each feature has:

- Enabled / Disabled

- Minimum required version


**Requirements:**

1. Store application version

2. Decide if feature can run

3. Use:

    - `if / else`

    - `ternary operator`

    - `const` and `readonly`

      "متتخضش السؤال فيه حشو بس سهل لو ركزت"
```

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### **Question 3: Number Classification Engine**
use : List<int> numbers = new List<int> { 2, 3, 4, 5, 6, 7, 8, 9,
```

```
10 };

Write a method that accepts `List<int>` and returns:

- Even numbers

- Odd numbers

- Prime numbers


**Rules:**

- Only **one loop**

- No LINQ

- Logic must be split into helper methods
```

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### **Question 4: Memory Behavior Test**

Create:

- Class `User`

- Struct `UserSnapshot`


**Steps:**

1. Pass both to a method

2. Modify inside method

3. Call once normally

4. Call once using `ref`
```

```
**Explain:**

- What changed?

- Why?

- Stack vs Heap
```

```
### **Question 5: Payment Exception Design**

Design a payment system.

**Requirements:**

1. Create custom exceptions:

    - `InsufficientBalanceException`

    - `PaymentTimeoutException`

2. Use:

    - try / catch / finally

3. Catch specific exceptions before general ones
```

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## part2

LeetCode

1 ( Longest Common Prefix)
2(217. Contains Duplicate)
3(242. Valid Anagram)