NAME: Haris Shah

REG#: Fa20-Bcs-004

Subject: Complier Construction Lab\_Mid

DATE: 25/10/2023

**Q:** **Briefly describe the regex library of C#**

**Ans:**

The regex library in C# is part of the .NET Framework's **System.Text.RegularExpressions** namespace. It provides a comprehensive set of classes and methods for working with regular expressions, allowing you to perform various text processing tasks. Key components of the C# regex library include:

**Key Classes in C# Regex Library:**

1. **Regex:** The `Regex` class is the primary class in the library. It represents a compiled regular expression pattern and provides methods for pattern matching and replacement.

2. **Match:** The `Match` class represents a single match of a regular expression pattern in an input string. It provides information about the matched text and its position.

3. **MatchCollection:** This class represents a collection of `Match` objects. It is returned by methods like `Regex.Matches()` when you want to find all matches in an input string.

**Basic Operations Performed:**

1. **Pattern Matching (Regex.Match):** You can use `Regex.Match()` to find the first occurrence of a regular expression pattern in an input string. It returns a `Match` object containing information about the first match.

2. **Pattern Matching (Regex.Matches):** The `Regex.Matches()` method finds all occurrences of a pattern in an input string and returns a `MatchCollection` containing all the matches.

3**. Pattern Replacement (Regex.Replace):** You can use `Regex.Replace()` to replace all occurrences of a pattern in an input string with a specified replacement string.

**Common Regex Elements:**

**Literals:**

Characters that match themselves, e.g., "abc" matches the string "abc."

**Character Classes:**

Square brackets define character classes, like `[A-Za-z]` to match any uppercase or lowercase letter.

**Quantifiers**:

Specify how many times a character or group should appear. For example, `\*` matches zero or more times, and `+` matches one or more times.

**Anchors:** `^` matches the start of a line, and `$` matches the end.

**Escape Sequences:**

Backslashes `\` are used to escape special characters. For example, `\.` matches a literal period, and `\d` matches a digit.