

# Advance Programming Techniques (APT)

Lecture # 38

**Ehtisham Rasheed**

Department of Computer Science  
University of Gurjat, Gujrat

UNIVERSITY OF GUJRAT



# Regular Expression

- Regular Expressions (Regex) are specially formatted strings used to find patterns in text.
- Regular Expressions (Regex) are powerful text-matching patterns used to validate, search, or manipulate strings
- In **C#**, Regex is available through the **System.Text.RegularExpressions** namespace

# Why do we need RegEx?

- Because normal string functions (Contains, StartsWith, Length checks) are not enough for patterns like:
  - Valid email format
  - Strong password
  - CNIC format
  - Phone numbers
  - Only alphabets
  - Only digits etc
- RegEx gives us **perfect control** over allowed and forbidden formats

# Using RegEx in C#

- Add this namespace first:

```
using System.Text.RegularExpressions;
```

- Then validate using:

```
bool isValid = Regex.IsMatch(inputText, pattern);
```

- Or create a RegExp object:

```
Regex rg = new Regex(pattern);  
bool isValid = rg.IsMatch(input);
```

# Basic Metacharacters (Very Important)

Symbol	Meaning	Example
.	any single character	a.c matches "a", "c"
^	start of string	^A (starts with A)
\$	end of string	Z\$ (ends with Z)
[ ]	character class	[abc], [0-9]
[^ ]	NOT	[^a-z]
+	1 or more	[0-9]+
*	0 or more	[a-z]*
?	optional	colo?r matches color/colour
{m,n}	repetition range	[0-9]{4}
\d    \D	any digit	[0-9]
\w    \W	any word char	letters + digits + _
\s    \S	any whitespace	spaces, tabs

# Simple Examples

- RE to test only alphabets
- RE to test only digits
- RE to test username (letters, digits, length from 5 to 12)
- RE to test PIN (fixed-length numbers 4-digit PIN)
- RE to test a string which must start with capital letter
- RE to test phone number (Pakistan format 03xx-xxxxxxx)
- RE to test CNIC (xxxxxx-xxxxxxxx-x)

# Complex Examples

- Email validation
- Strong password (uppercase, lowercase, digit, special, 8+ chars)

Prepared BY: Ehtisham Rasheed