



**UNIVERSITY OF ENGINEERING AND TECHNOLOGY TAXILA**

**FACULTY OF TELECOMMUNICATION AND INFORMATION ENGINEERING**

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# **DIGITAL IMAGE**

# **PROCESSING**

## **LAB MANUAL 3**

Some Basic Relationship of Pixels

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### Some Basic Relationship between Pixels

#### Lab Objectives

This objective of this lab is to understand

1. Basic Relationship of Pixel i.e. **Connectivity based on following two**

**method:**

- a) 4-Adjacency
- b) 8-Adjacency

#### 4-Adjacency

A pixel  $p$  at  $(x,y)$  has 2 horizontal and 2 vertical neighbors:

- $(x+1,y)$ ,
- $(x-1,y)$
- $(x,y+1)$
- $(x,y-1)$

#### 8-Adjacency

A pixel  $p$  at  $(x,y)$  has 2 horizontal , 2 vertical neighbors and pixels at diagonals:

- $(x+1,y+1)$ ,
- $(x-1,y-1)$
- $(x-1,y+1)$
- $(x+1,y-1)$



**Task 1**

**Write a program to find the sets of connected component in binary image based on 4-adjacent neighbors.**

**Task 2**

**Write a program to find the sets of connected component in a binary image based on 8-adjacent neighbors.**

**Note. Binary images can be created in mspaint or any other tool of your choice.**