

# Class 2

## Summary

## Terminology

alphabet

- set of  $n$  elements called letters

String

- ordered sequence of  $n$  letters from the alphabet

permutation

- Every letter of the alphabet must be there exactly once

simple graph

- no loops

adjacent

- edge from vertex  $a \rightarrow b$

degree

- number of adjacent vertices

complete

- all possible edges, no loops

path

- sequence of vertices, must be distinct

cycle

- must come back to the first vertex

connected graph

- path in  $G$  from any vertex  $i$  to any vertex  $j$
- can go from any vertex to any other vertex

disconnected graph

- can not get to every vertex from any other vertex

tree

- connected and has no cycles
- minimum number of edges while still being connected

- same tree if the structure is the same. We don't care about the vertex labels

isomorphic

- Having a similar structure or appearance but being of different ancestry.

## Sets and subsets

How many ways can we choose ...

***Choosing  $n$  elements is the same as choosing (removing)  $|S|-n$***

## Strings and permutations

### graphs

### trees