Cairo University

Faculty of Computers and Information

Information Systems Department

Discrete Structures, Year 2011/2012

Section Handout No.6

Recall For sets:

Power Set:

If we have a set A= {a, b, c}:
- Then a subset of it could be {a} or {b}, or {a, c}, and so on,
- And {a, b, c} is also a subset of {a, b, c} *(yes, that's true, but its not a "proper subset")*
- And the empty set {} is also a subset of {a ,b, c}

In fact, if you list all the subsets of S= {a, b, c} you will have the **Power Set** of {a, b, c}:
$$P(A) = \{\{\}, \{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$$

Think of it as all the different ways you can select the items (the order of the items doesn't matter), including selecting none, or all. If the original set has n members, then the Power Set will have 2^n members

If we have a set B= {{a},{b}, c}:
$$P(B) = \{\{\}, \{\{a\}\}, \{\{b\}\}, \{c\}, \{\{a\}, \{b\}\}, \{\{a\}, c\}, \{\{b\}, c\}, \{\{a\}, \{b\}, c\}\}$$