* **Power Set:**
* Given the set **S = {0, 1}**. What are all the possible subsets of S? They are: **∅** (as it is a subset of all sets), {0}, {1}, and {0, 1}.
* The power set of **S** written as **P(S)** is the set of all the subsets of **S** **P(S) = {∅, {0}, {1}, {0,1}}.**
  + Note that **|S| = 2** and |**P(S)| = 4.**
* The ***power set* P(*S*)** of a set ***S*** is the set of all subsets of ***S***. **P(*S*) = {*x* | *x* ⊆ *S*}.**
* *E*.*g.* P({a, b}) = {∅, {a}, {b}, {a, b}}.
* Sometimes P(*S*) is written **2***S.*
  + Note that for finite ***S***, |P(*S*)| = 2|*S*|.
* It turns out that **|P(N)| > |N|**. *There are different sizes of infinite sets*!
* Let T = {0, 1, 2}. The P(T) = {∅, {0}, {1}, {2}, {0,1}, {0,2}, {1,2}, {0,1,2}}.
  + Note that |T| = 3 and |P(T)| = 8
* P(∅) = { ∅ }
  + - Note that |∅| = 0 and |P(∅)| = 1
* If a set has ***n*** elements, then the power set will have **2*n*** elements.