Subsets Algorithm

This algorithm will compute all the subset of a specified size for a given set. For example, for a set with values $\{1, 2, 3, 4\}$, all the subsets of size 2 would be: $\{1, 2\}$, $\{1, 3\}$, $\{1, 4\}$, $\{2, 3\}$, $\{2, 4\}$, $\{3, 4\}$. Notice that $\{2, 1\}$ is not include because set's do not have an ordering to them i.e. $\{1, 2\}$ is the same as $\{2, 1\}$.

Continuing the example, all the subsets of size 3 would be: $\{1, 2, 3\}$, $\{1, 2, 4\}$, $\{2, 3, 4\}$.

```
procedure SUBSETS(Set set, int size)
    values = all the values from set as an array
    newSet = new empty set
    return SubsetsHelper(newSet, values, 0, size)
end procedure
```

```
procedure SUBSETSHELPER(Set set, Vertex[] values, int current, int size)
    if size(set) == size then
        return [set]                              ▷ a list/array with a just set in it
    else
        subs = new empty set
        for i = current ... size(values) do
            newSet = copy of set
            add(newSet, values[i])
            recSubs = SubsetsHelper(newSet, values, i + 1, size)
            addAll(subs, recSubs)                 ▷ add all the elements of recSubs to subs
        end for
        return subs
    end if
end procedure
```