

MSMS 106 : Practical 14

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➡ Objective

Write an R program to generate all possible subsets of the finite sample space $\Omega = \{4, 5, 6\}$.

➡ R Program

```
x1 <- c(4, 5, 6)
```

```
generate_subset <- function(set){  
  backtrack_subset(set, 1, c())  
}  
  
backtrack_subset <- function(set, index, current_subset){  
  if(index > length(set)){  
    print(current_subset)  
  } else{  
    current_subset <- unique(c(current_subset, set[index]))  
    backtrack_subset(set, index + 1, current_subset)  
  
    current_subset <- current_subset[-length(current_subset)]  
    backtrack_subset(set, index + 1, current_subset)  
  }  
}
```

```
generate_subset(x1)
```

```
## [1] 4 5 6  
## [1] 4 5  
## [1] 4 6  
## [1] 4  
## [1] 5 6  
## [1] 5  
## [1] 6  
## numeric(0)
```

➡ Conclusion



We get a class of all 8 subsets of $\{4, 5, 6\}$, thus a σ -field on $\Omega = \{4, 5, 6\}$.