**Question 12.2**

To determine the value of 10 different yes/no features to the market value of a house (large yard, solar roof, etc.), a real estate agent plans to survey 50 potential buyers, showing a fictitious house with different combinations of features. To reduce the survey size, the agent wants to show just 16 fictitious houses. Use R’s FrF2 function (in the FrF2 package) to find a fractional factorial design for this experiment: what set of features should each of the 16 fictitious houses have? Note: the output of FrF2 is “1” (include) or “-1” (don’t include) for each feature.

# Answer :

**Fractional Factorial Design:** This method is used to test a subset of combinations of the features.

In a balanced Factorial Design,

# Test each choice the same number of times

1. Test each pair of choices the same number of times.

If there are Independent Factors:

# Test each subset of combinations

1. Use Regression to estimate the effects.

# In the question 12.2,

Number of features/factors = 10.

# Number of people to survey = 50

Number of groups for the subset of these 10 factors need to be created = 16.

# In this example, we do not know the names of the factors nor we have any information whether the factors are independent or not. So I will use a simple FrF2() function to get the best subset of factors for each of the 16 groups.