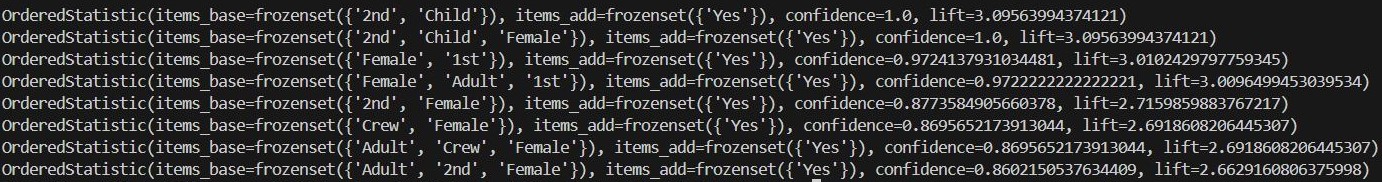
**Lab 7**

Association rules for Survived = ‘Yes’ using Apriori algorithm, with minimum support 0.005, minimum confidence 0.8, and minimum item length 2 are:

* 2nd and Child
  + Confidence=1.0
  + Lift=3.09563994374121
* 2nd, Child and Female
  + Confidence=1.0
  + Lift=3.09563994374121
* Female and 1st
  + Confidence=0.9724137931034481
  + Lift=3.0102429797759345
* Female, Adult and 1st
  + Confidence=0.9722222222222221
  + Lift=3.0096499453039534
* 2nd and Female
  + Confidence=0.8773584905660378
  + Lift=2.7159859883767217
* Crew and Female
  + Confidence=0.8695652173913044
  + Lift=2.6918608206445307
* Adult, Crew and Female
  + Confidence=0.8695652173913044
  + Lift=2.6918608206445307
* Adult, 2nd and Female
  + Confidence=0.8602150537634409
  + Lift=2.6629160806375998



**Factors Impacting Titanic Passenger Survival**

* Gender: The above-mentioned 8 association rules indicate that Gender = Female had a high chance of survival in comparison with the Male passengers.
* Class: Those passengers that were traveling in higher class i.e., 1st and 2nd had better survival rates compared to those traveling in the lower class i.e., 3rd and crew. This can be justified by the first five rules mentioned above. These five rules have the highest value of lift which contains the higher-class factor i.e., 1st and 2nd.
* Age: As per the above rules, it can be concluded that the Child age group had a higher survival rate compared to that of the Adult. This can be justified by the first two rules where the value of lift is 3.09.

**Lift Measure**

The lift measure has provided valuable insight into determining the strength of the association of different factors such as gender, class, and age to identify the passenger with survival. A lift value greater than 1 indicates a positive correlation, suggesting that the presence of factors such as gender, class, and age increases the likelihood of passenger survival.

While interpreting the factors that impacted Titanic passenger survival, we had both Children and Adults for the class Age in the above-mentioned eight association rules. To determine the most impacting factor, we checked Lift. Here, the factor Child contributes more impact on the survival rate rather than the Adult age group. This can be concluded because the lift value of the association rule that consists of a child is higher than that of the association rule that contains an adult.