**Short Report to Solved Problem**

**Introduction:**

Accurately estimating the risk of a heart attack is essential for prompt intervention and avoidance. In order to improve our model's predictive capacity, we offer our hybrid feature selection strategy in this study. Our goal is to find the most significant features for precise heart attack prediction by combining the advantages of two feature selection methods.

**Problem Statement:**

The aim is to create a predictive model for heart attack prediction by identifying the most informative features from the input dataset. We combine two different approaches, Select K Best with chi-squared test and ExtraTreesClassifier, in an attempt to improve feature selection.

**Solution Overview:**

**Select K Best with chi-squared Test:**

* A univariate feature selection technique called Select K Best chooses the top k features according to a given scoring function (in this example, the chi-squared test).
* Finding the characteristics that have the strongest correlation with the goal variable is made easier with the use of this technique.

**ExtraTreesClassifier:**

* Fitting an ensemble of decision trees (Extra Trees) on the data is the goal of the ensemble learning technique ExtraTreesClassifier.
* Based on how frequently a characteristic appears in the trees, it calculates its relevance.

**Hybrid Feature Selection:**

* To produce a more complete collection of features, we integrated the chosen features from ExtraTreesClassifier and Select K Best.
* We captured a wide range of informative features by include features chosen by either or both approaches in the final collection.

**Implementation:**

* We used Python's scikit-learn module to implement the solution.
* Using the training set of data, Select K Best and ExtraTreesClassifier were both initialized and fitted.
* Each technique yielded a set of selected features, which were then combined using NumPy’s union1d() function.
* The final collection of chosen features is a hybrid strategy that makes use of the advantages of both techniques.

**Conclusion:**

Finally, our hybrid feature selection method combines Extra Trees Classifier's thorough examination with Select K Best's efficaciousness. We discovered a strong collection of features for heart attack prediction by combining these techniques, which may increase the precision and generalizability of our predictive model. The model will undergo additional assessment and improvement in order to maximize its effectiveness in actual healthcare situations.