Separating a mixture of alkanes

This mixture is made up of liquids, so we might be thinking that distillation will separate these out. This partly right. Because the boiling points are quite similar we need a more advanced type of distillation. We use fractional distillation.

1. The mixture is heated until it boils

2. The gases from the boiling mixture pass gradually up the fractionating column. The column is hotter at the bottom than at the top. As the temperature falls moving up the column individual compounds in the mixture condense as the temperature falls below their boiling point and run back down to a point where the temperature is above their boiling point.

3. By the time the gas gets to the top of the column only the fraction with the lowest boiling point is still a vapour and it passes into the condenser.

4. Individual fractions (compounds, alkanes) are condensed into pure liquids and run down into collecting flask.

Oil Refining is an industrial version of fractional distillation and it is used to separate the crude oil mixture of compounds into pure (or purer) fractions such as petrol or diesel oil.