1. Energy calculation

* The total energy is calculated to be around 3601.695 Kcal

(The process is shown in Meal IQ.R)

Assumptions made:

1. the unit of energy is kcal
2. The manufacturer of these food is Tesco
3. The weight of 3 potatoes is assumed to be 500g

*(There' s no information about the weight of one potato. For the convenience of calculation, one of the solution should be create a database listing a standard average weight of these ingredients, such as potatoes or carrots.)

4. The weight of 2 carrots is assumed to be 100g
5. The weight of 10 mushrooms is assumed to be 200g
6. The weight of 25 broad beans is assumed to be 125g
7. Romanesco is assumed to be representing the Romanesco Brocoli(The total weight is assumed to be 150g)
8. the amount of Spaghetti used is equal to the 1/3 of the total of other materials

2. Felix has discovered many recipes, each with ingredients in the format above. Felix now wants to compare the recipes against each other, so that he can find out how ingredient usage varies on a per-recipe basis. How would you prepare the data for this task, and how would you visualize it?

Data preparation:

Step1: Save recipes as txt documents

Step2: transform text strings to data frames via read.delim()

Step3: do data mining and cleaning and transform these data into data frames like below:

quantity	unit	material
2	tbsp	olive oil
2	cloves	garlic
1	cup	chopped onions
2	litres	vegetable stock
150	g	Romanesco
125	g	Broad Beans
20	g	palm sugar
500	g	potatoes
100	g	carrots
200	g	button mushrooms

Step4: Unify the unit into g(quantity will also change as the unit changes).

Step5: Specify from which recipe it comes, example:

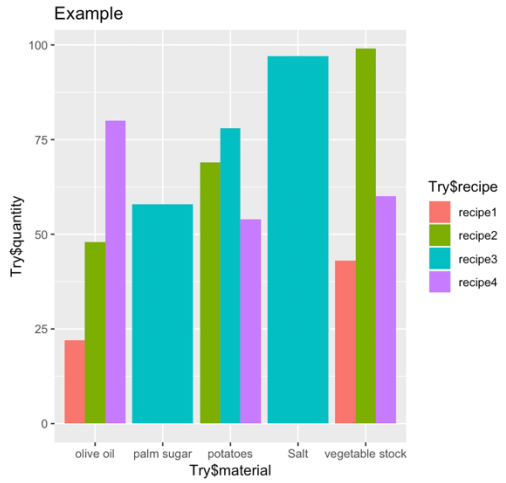
	quantity	material	recipe
1	43	vegetable stock	recipe1
2	25	vegetable stock	recipe1
3	22	olive oil	recipe1
4	69	potatoes	recipe2
5	99	vegetable stock	recipe2
6	48	olive oil	recipe2
7	78	potatoes	recipe3
8	58	palm sugar	recipe3
9	97	Salt	recipe3
10	80	olive oil	recipe4
11	54	potatoes	recipe4
12	60	vegetable stock	recipe4

*(this is just an example used to show how' s it like, and please ignore the data used)

Data Visualization:

*R package used is ggplot2:

We visualize the above information into bar plots, like below:



*(this is just an very informal and simple example showing how' s it like)

```
install.packages("ggplot2")
library(ggplot2)
Try <- data.frame(quantity=sample(1:100,12,replace = TRUE),material = sample(c(energy$material,"Salt","Ginger","Brocoli"),
        12,replace = TRUE),recipe = c(rep("recipe1",3),rep("recipe2",3),rep("recipe3",3),rep("recipe4",3)))
ggplot(Try,aes(x=Try$material,y=Try$quantity,fill=Try$recipe))+geom_bar(stat='identity',position='dodge')+ggtitle('Example')+theme()
```