Problem Statement

A. Obtain the elements of the union between two character vectors.
vec1 = c(rownames(mtcars[1:15,]))
vec2 = c(rownames(mtcars[10:32,]))

Answer :

The R-script for the given problem is as follows:

```
vec1 = c(rownames(mtcars[1:15,]))
vec2 = c(rownames(mtcars[10:32,]))
vec1
vec2
union(vec1, vec2)
```

The output of the R-Script (from Console window) is given as follows:

```
> vec1 = c(rownames(mtcars[1:15,]))
> vec2 = c(rownames(mtcars[10:32,]))
> vec1
 [1] "Mazda RX4"          "Mazda RX4 Wag"      "Datsun 710"         "Horne
t 4 Drive"
 [5] "Hornet Sportabout"  "Valiant"            "Duster 360"         "Merc
240D"
 [9] "Merc 230"           "Merc 280"           "Merc 280C"          "Merc
450SE"
[13] "Merc 450SL"         "Merc 450SLC"        "Cadillac Fleetwood"
> vec2
 [1] "Merc 280"            "Merc 280C"           "Merc 450SE"
 [4] "Merc 450SL"          "Merc 450SLC"         "Cadillac Fleetwood"
 [7] "Lincoln Continental" "Chrysler Imperial"   "Fiat 128"
[10] "Honda Civic"         "Toyota Corolla"      "Toyota Corona"
[13] "Dodge Challenger"    "AMC Javelin"         "Camaro Z28"
[16] "Pontiac Firebird"    "Fiat X1-9"           "Porsche 914-2"
[19] "Lotus Europa"        "Ford Pantera L"      "Ferrari Dino"
[22] "Maserati Bora"       "Volvo 142E"
> union(vec1, vec2)
 [1] "Mazda RX4"           "Mazda RX4 Wag"       "Datsun 710"
 [4] "Hornet 4 Drive"      "Hornet Sportabout"   "Valiant"
 [7] "Duster 360"          "Merc 240D"           "Merc 230"
[10] "Merc 280"            "Merc 280C"           "Merc 450SE"
[13] "Merc 450SL"          "Merc 450SLC"         "Cadillac Fleetwood"
[16] "Lincoln Continental" "Chrysler Imperial"   "Fiat 128"
[19] "Honda Civic"         "Toyota Corolla"      "Toyota Corona"
[22] "Dodge Challenger"    "AMC Javelin"         "Camaro Z28"
[25] "Pontiac Firebird"    "Fiat X1-9"           "Porsche 914-2"
[28] "Lotus Europa"        "Ford Pantera L"      "Ferrari Dino"
[31] "Maserati Bora"       "Volvo 142E"
```

B. Get those elements that are common to both vectors

vec1 = c(rownames(mtcars[1:15,]))
vec2 = c(rownames(mtcars[10:32,]))

Answer :

The R-script for the given problem is as follows:

```
vec1 = c(rownames(mtcars[1:15,]))
vec2 = c(rownames(mtcars[10:32,]))
vec1
vec2
union(vec1, vec2)
intersect(vec1,vec2)
which(vec1%in%vec2)
```

The output of the R-Script (from Console window) is given as follows:

```
> vec1 = c(rownames(mtcars[1:15,]))
> vec2 = c(rownames(mtcars[10:32,]))
> vec1
 [1] "Mazda RX4"          "Mazda RX4 Wag"      "Datsun 710"         "Horne
t 4 Drive"
 [5] "Hornet Sportabout"  "Valiant"            "Duster 360"         "Merc
240D"
 [9] "Merc 230"           "Merc 280"           "Merc 280C"          "Merc
450SE"
[13] "Merc 450SL"         "Merc 450SLC"        "Cadillac Fleetwood"
> vec2
 [1] "Merc 280"            "Merc 280C"           "Merc 450SE"
 [4] "Merc 450SL"          "Merc 450SLC"         "Cadillac Fleetwood"
 [7] "Lincoln Continental" "Chrysler Imperial"   "Fiat 128"
[10] "Honda Civic"         "Toyota Corolla"      "Toyota Corona"
[13] "Dodge Challenger"    "AMC Javelin"         "Camaro Z28"
[16] "Pontiac Firebird"    "Fiat X1-9"           "Porsche 914-2"
[19] "Lotus Europa"        "Ford Pantera L"      "Ferrari Dino"
[22] "Maserati Bora"       "Volvo 142E"
> union(vec1, vec2)
 [1] "Mazda RX4"           "Mazda RX4 Wag"       "Datsun 710"
 [4] "Hornet 4 Drive"      "Hornet Sportabout"   "Valiant"
 [7] "Duster 360"          "Merc 240D"           "Merc 230"
[10] "Merc 280"            "Merc 280C"           "Merc 450SE"
[13] "Merc 450SL"          "Merc 450SLC"         "Cadillac Fleetwood"
[16] "Lincoln Continental" "Chrysler Imperial"   "Fiat 128"
[19] "Honda Civic"         "Toyota Corolla"      "Toyota Corona"
[22] "Dodge Challenger"    "AMC Javelin"         "Camaro Z28"
[25] "Pontiac Firebird"    "Fiat X1-9"           "Porsche 914-2"
[28] "Lotus Europa"        "Ford Pantera L"      "Ferrari Dino"
[31] "Maserati Bora"       "Volvo 142E"
> intersect(vec1,vec2)
[1] "Merc 280"           "Merc 280C"          "Merc 450SE"         "Merc 4
50SL"
[5] "Merc 450SLC"        "Cadillac Fleetwood"
> which(vec1%in%vec2)
```

```
[1] 10 11 12 13 14 15
```

C. Get the difference of the elements between two character vectors.

vec1 = c(rownames(mtcars[1:15,]))
vec2 = c(rownames(mtcars[10:32,]))

Answer :

The R-script for the given problem is as follows:

setdiff(vec1, vec2)
setdiff(vec2, vec1)

The output of the R-Script (from Console window) is given as follows:

```
> setdiff(vec1, vec2)
[1] "Mazda RX4"         "Mazda RX4 Wag"     "Datsun 710"        "Hornet 4
Drive"
[5] "Hornet Sportabout" "Valiant"           "Duster 360"        "Merc 240D
"
[9] "Merc 230"
> setdiff(vec2, vec1)
 [1] "Lincoln Continental" "Chrysler Imperial"   "Fiat 128"
 [4] "Honda Civic"         "Toyota Corolla"      "Toyota Corona"
 [7] "Dodge Challenger"    "AMC Javelin"         "Camaro Z28"
[10] "Pontiac Firebird"    "Fiat X1-9"           "Porsche 914-2"
[13] "Lotus Europa"        "Ford Pantera L"      "Ferrari Dino"
[16] "Maserati Bora"       "Volvo 142E"
```

D. Test the equality of two character vectors

vec1 = c(rownames(mtcars[1:15,]))
vec2 = c(rownames(mtcars[11:25,]))

Answer :

setequal(vec1, vec2)

The output of the R-Script (from Console window) is given as follows:

```
> setequal(vec1, vec2)
[1] FALSE
> setequal( union(vec1, vec2),
+           c(setdiff(vec1, vec2), intersect(vec1, vec2), setdiff(vec1, vec2)))
[1] FALSE

>
```