PROJECT 1 – SRI SAI JANANI_VOORA JANARDHAN – CWID:50238909

QUESTION 1– R-CODE:

Exam_1_Janani.R

Source on Save

```
1  # Question 1
2
3  filename = file.choose()                                  #To choose a file manually
4  data = read.table(filename,TRUE,",",na.string="*")
5  CarP = data.frame(data)                                   #Create dataframe
6  CarP
7
```

OUTPUT 1:

```
> # Question 1
>
> filename = file.choose()                          #To choose a file manually
> data = read.table(filename,TRUE,",",na.string="*")
> CarP = data.frame(data)                           #Create dataframe
> CarP
   manufacturer              model displ year cyl      trans drv cty hwy fl   class
1          audi                 a4   1.8 1999   4   auto(l5)   f  18  29  p compact
2          audi                 a4   1.8 1999   4 manual(m5)   f  21  29  p compact
3          audi                 a4   2.0 2008   4 manual(m6)   f  20  31  p compact
4          audi                 a4   2.0 2008   4   auto(av)   f  21  30  p compact
5          audi                 a4   2.8 1999   6   auto(l5)   f  16  26  p compact
6          audi                 a4   2.8 1999   6 manual(m5)   f  18  26  p compact
7          audi                 a4   3.1 2008   6   auto(av)   f  18  27  p compact
8          audi          a4 quattro   1.8 1999   4 manual(m5)   4  18  26  p compact
9          audi          a4 quattro   1.8 1999   4   auto(l5)   4  16  25  p compact
10         audi          a4 quattro   2.0 2008   4 manual(m6)   4  20  28  p compact
11         audi          a4 quattro   2.0 2008   4   auto(s6)   4  19  27  p compact
12         audi          a4 quattro   2.8 1999   6   auto(l5)   4  15  25  p compact
13         audi          a4 quattro   2.8 1999   6 manual(m5)   4  17  25  p compact
14         audi          a4 quattro   3.1 2008   6   auto(s6)   4  17  25  p compact
15         audi          a4 quattro   3.1 2008   6 manual(m6)   4  15  25  p compact
16         audi          a6 quattro   2.8 1999   6   auto(l5)   4  15  24  p midsize
17         audi          a6 quattro   3.1 2008   6   auto(s6)   4  17  25  p midsize
18         audi          a6 quattro   4.2 2008   8   auto(s6)   4  16  23  p midsize
19    chevrolet  c1500 suburban 2wd   5.3 2008   8   auto(l4)   r  14  20  r     suv
20    chevrolet  c1500 suburban 2wd   5.3 2008   8   auto(l4)   r  11  15  e     suv
21    chevrolet  c1500 suburban 2wd   5.3 2008   8   auto(l4)   r  14  20  r     suv
22    chevrolet  c1500 suburban 2wd   5.7 1999   8   auto(l4)   r  13  17  r     suv
23    chevrolet  c1500 suburban 2wd   6.0 2008   8   auto(l4)   r  12  17  r     suv
24    chevrolet            corvette   5.7 1999   8 manual(m6)   r  16  26  p 2seater
25    chevrolet            corvette   5.7 1999   8   auto(l4)   r  15  23  p 2seater
26    chevrolet            corvette   6.2 2008   8 manual(m6)   r  16  26  p 2seater
27    chevrolet            corvette   6.2 2008   8   auto(s6)   r  15  25  p 2seater
28    chevrolet            corvette   7.0 2008   8 manual(m6)   r  15  24  p 2seater
29    chevrolet     k1500 tahoe 4wd   5.3 2008   8   auto(l4)   4  14  19  r     suv
30    chevrolet     k1500 tahoe 4wd   5.3 2008   8   auto(l4)   4  11  14  e     suv
31    chevrolet     k1500 tahoe 4wd   5.7 1999   8   auto(l4)   4  11  15  r     suv
32    chevrolet     k1500 tahoe 4wd   6.5 1999   8   auto(l4)   4  14  17  d     suv
33    chevrolet              malibu   2.4 1999   4   auto(l4)   f  19  27  r midsize
34    chevrolet              malibu   2.4 2008   4   auto(l4)   f  22  30  r midsize
35    chevrolet              malibu   3.1 1999   6   auto(l4)   f  18  26  r midsize
36    chevrolet              malibu   3.5 2008   6   auto(l4)   f  18  29  r midsize
37    chevrolet              malibu   3.6 2008   6   auto(s6)   f  17  26  r midsize
38        dodge        caravan 2wd   2.4 1999   4   auto(l3)   f  18  24  r minivan
39        dodge        caravan 2wd   3.0 1999   6   auto(l4)   f  17  24  r minivan
40        dodge        caravan 2wd   3.3 1999   6   auto(l4)   f  16  22  r minivan
41        dodge        caravan 2wd   3.3 1999   6   auto(l4)   f  16  22  r minivan
42        dodge        caravan 2wd   3.3 2008   6   auto(l4)   f  17  24  r minivan
```

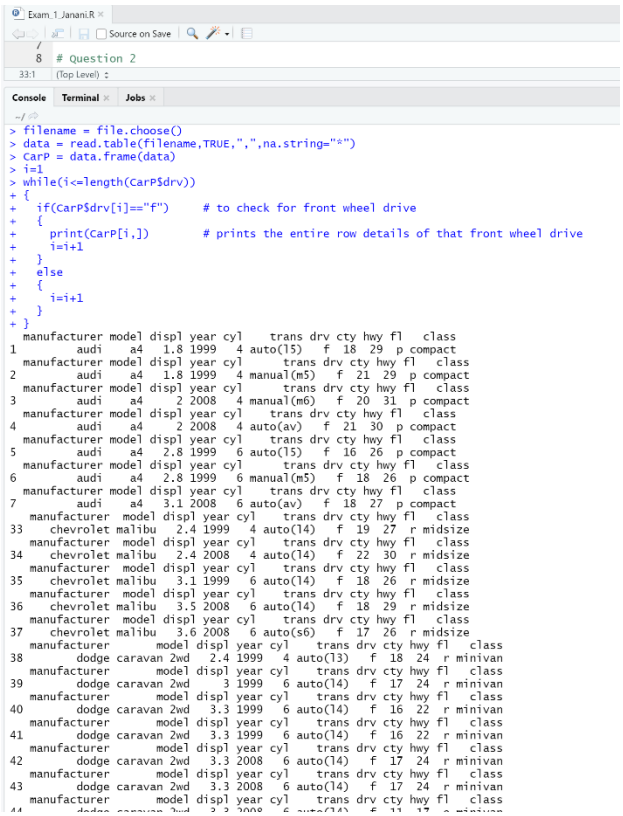
QUESTION 2– R-CODE:

Exam_1_Janani.R

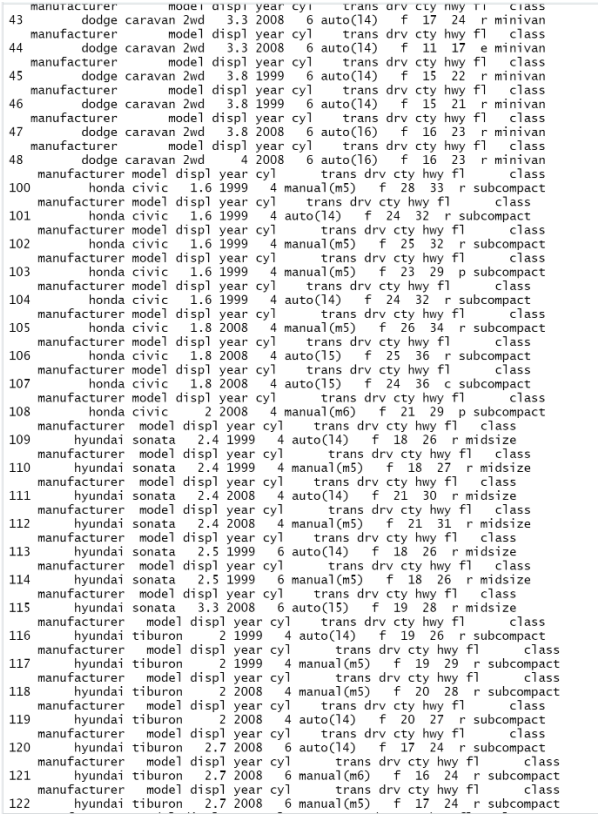
Source on Save

```
8  # Question 2
9
10 filename = file.choose()
11 data = read.table(filename,TRUE,",",na.string="*")
12 CarP = data.frame(data)
13 i=1
14 while(i<=length(CarP$drv))
15 {
16   if(CarP$drv[i]=="f")      # to check for front wheel drive
17   {
18     print(CarP[i,])         # prints the entire row details of that front wheel drive
19     i=i+1
20   }
21   else
22   {
23     i=i+1
24   }
25 }
```

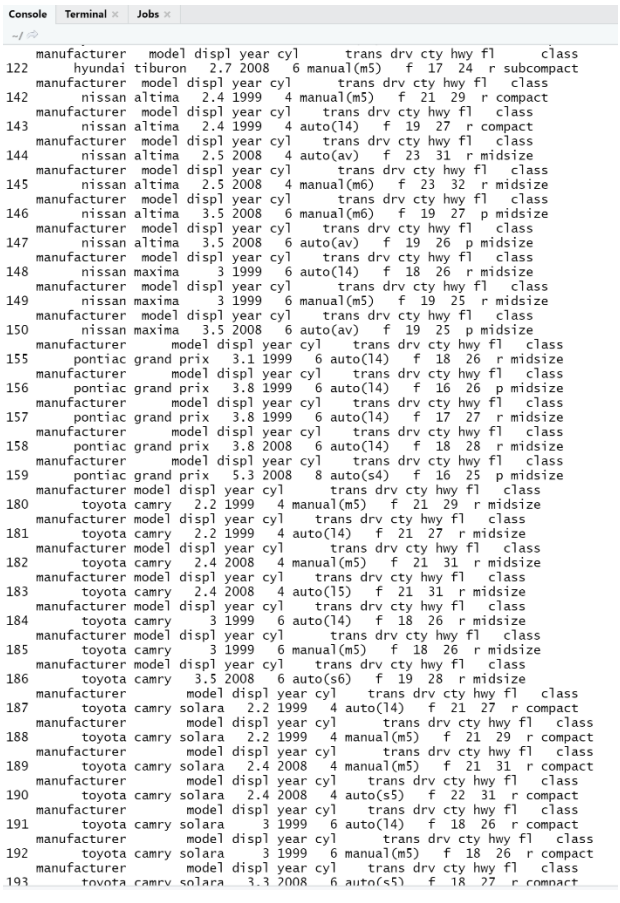
OUTPUT 2:



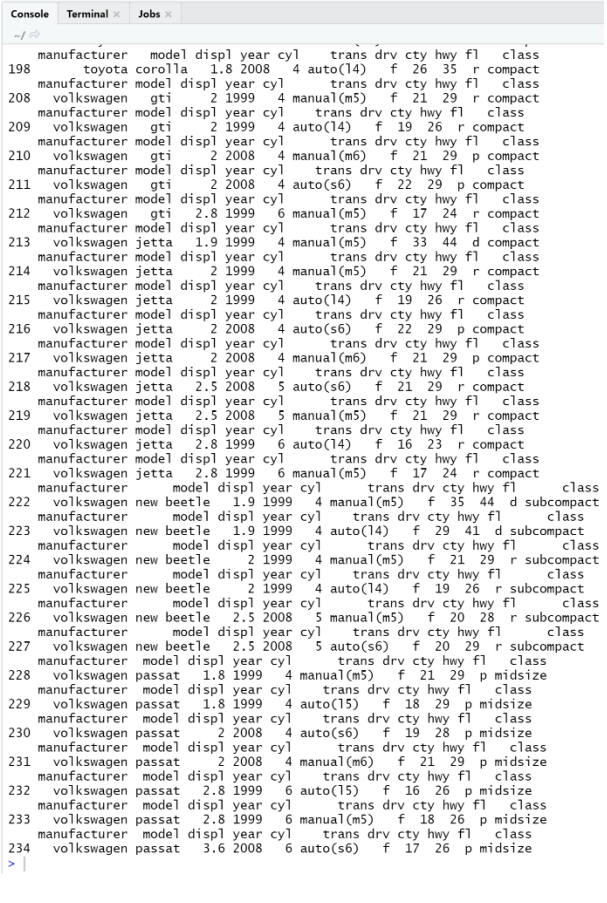
```
Exam_1_JananiR.R
Source on Save
8  # Question 2
33:1  (Top Level)
Console  Terminal  Jobs
~/
> filename = file.choose()
> data = read.table(filename,TRUE,",",na.string="*")
> CarP = data.frame(data)
> i=1
> while(i<=length(CarP$drv))
+ {
+   if(CarP$drv[i]=="f")     # to check for front wheel drive
+   {
+     print(CarP[i,])        # prints the entire row details of that front wheel drive
+     i=i+1
+   }
+   else
+   {
+     i=i+1
+   }
+ }
  manufacturer model displ year cyl    trans drv cty hwy fl   class
1         audi    a4   1.8 1999   4 auto(15)   f  18  29   p compact
  manufacturer model displ year cyl      trans drv cty hwy fl   class
2         audi    a4   1.8 1999   4 manual(m5)   f  21  29   p compact
  manufacturer model displ year cyl      trans drv cty hwy fl   class
3         audi    a4     2 2008   4 manual(m6)   f  20  31   p compact
  manufacturer model displ year cyl      trans drv cty hwy fl   class
4         audi    a4     2 2008   4 auto(av)   f  21  30   p compact
  manufacturer model displ year cyl      trans drv cty hwy fl   class
5         audi    a4   2.8 1999   6 auto(15)   f  16  26   p compact
  manufacturer model displ year cyl      trans drv cty hwy fl   class
6         audi    a4   2.8 1999   6 manual(m5)   f  18  26   p compact
  manufacturer model displ year cyl      trans drv cty hwy fl   class
7         audi    a4     3.1 2008   6 auto(av)   f  18  27   p compact
  manufacturer  model displ year cyl    trans drv cty hwy fl   class
33   chevrolet malibu   2.4 1999   4 auto(l4)   f  19  27   r midsize
  manufacturer  model displ year cyl    trans drv cty hwy fl   class
34   chevrolet malibu   2.4 2008   4 auto(l4)   f  22  30   r midsize
  manufacturer  model displ year cyl    trans drv cty hwy fl   class
35   chevrolet malibu   3.1 1999   6 auto(l4)   f  18  26   r midsize
  manufacturer  model displ year cyl    trans drv cty hwy fl   class
36   chevrolet malibu   3.5 2008   6 auto(l4)   f  18  29   r midsize
  manufacturer  model displ year cyl    trans drv cty hwy fl   class
37   chevrolet malibu   3.6 2008   6 auto(s6)   f  17  26   r midsize
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
38       dodge caravan 2wd   2.4 1999   4 auto(l3)   f  18  24   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
39       dodge caravan 2wd     3 1999   6 auto(l4)   f  17  24   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
40       dodge caravan 2wd   3.3 1999   6 auto(l4)   f  16  22   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
41       dodge caravan 2wd   3.3 1999   6 auto(l4)   f  16  22   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
42       dodge caravan 2wd   3.3 2008   6 auto(l4)   f  17  24   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
43       dodge caravan 2wd   3.3 2008   6 auto(l4)   f  17  24   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
```



```
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
43       dodge caravan 2wd   3.3 2008   6 auto(l4)   f  17  24   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
44       dodge caravan 2wd   3.3 2008   6 auto(l4)   f  11  17   e minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
45       dodge caravan 2wd   3.8 1999   6 auto(l4)   f  15  22   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
46       dodge caravan 2wd   3.8 1999   6 auto(l4)   f  15  21   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
47       dodge caravan 2wd   3.8 2008   6 auto(l6)   f  16  23   r minivan
  manufacturer       model displ year cyl    trans drv cty hwy fl   class
48       dodge caravan 2wd     4 2008   6 auto(l6)   f  16  23   r minivan
   manufacturer model displ year cyl      trans drv cty hwy fl      class
100       honda civic   1.6 1999   4 manual(m5)   f  28  33   r subcompact
   manufacturer model displ year cyl    trans drv cty hwy fl      class
101       honda civic   1.6 1999   4 auto(l4)   f  24  32   r subcompact
   manufacturer model displ year cyl      trans drv cty hwy fl      class
102       honda civic   1.6 1999   4 manual(m5)   f  25  32   r subcompact
   manufacturer model displ year cyl      trans drv cty hwy fl      class
103       honda civic   1.6 1999   4 manual(m5)   f  23  29   p subcompact
   manufacturer model displ year cyl    trans drv cty hwy fl      class
104       honda civic   1.6 1999   4 auto(l4)   f  24  32   r subcompact
   manufacturer model displ year cyl      trans drv cty hwy fl      class
105       honda civic   1.8 2008   4 manual(m5)   f  26  34   r subcompact
   manufacturer model displ year cyl    trans drv cty hwy fl      class
106       honda civic   1.8 2008   4 auto(l5)   f  25  36   r subcompact
   manufacturer model displ year cyl    trans drv cty hwy fl      class
107       honda civic   1.8 2008   4 auto(l5)   f  24  36   c subcompact
   manufacturer model displ year cyl      trans drv cty hwy fl      class
108       honda civic     2 2008   4 manual(m6)   f  21  29   p subcompact
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
109      hyundai sonata   2.4 1999   4 auto(l4)   f  18  26   r midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
110      hyundai sonata   2.4 1999   4 manual(m5)   f  18  27   r midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
111      hyundai sonata   2.4 2008   4 auto(l4)   f  21  30   r midsize
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
112      hyundai sonata   2.4 2008   4 manual(m5)   f  21  31   r midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
113      hyundai sonata   2.5 1999   6 auto(l4)   f  18  26   r midsize
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
114      hyundai sonata   2.5 1999   6 manual(m5)   f  18  26   r midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
115      hyundai sonata   3.3 2008   6 auto(l5)   f  19  28   r midsize
   manufacturer   model displ year cyl    trans drv cty hwy fl      class
116      hyundai tiburon     2 1999   4 auto(l4)   f  19  26   r subcompact
   manufacturer   model displ year cyl      trans drv cty hwy fl      class
117      hyundai tiburon     2 1999   4 manual(m5)   f  19  29   r subcompact
   manufacturer   model displ year cyl      trans drv cty hwy fl      class
118      hyundai tiburon     2 2008   4 manual(m5)   f  20  28   r subcompact
   manufacturer   model displ year cyl    trans drv cty hwy fl      class
119      hyundai tiburon     2 2008   4 auto(l4)   f  20  27   r subcompact
   manufacturer   model displ year cyl    trans drv cty hwy fl      class
120      hyundai tiburon   2.7 2008   6 auto(l4)   f  17  24   r subcompact
   manufacturer   model displ year cyl      trans drv cty hwy fl      class
121      hyundai tiburon   2.7 2008   6 manual(m6)   f  16  24   r subcompact
   manufacturer   model displ year cyl      trans drv cty hwy fl      class
122      hyundai tiburon   2.7 2008   6 manual(m5)   f  17  24   r subcompact
```



```
Console  Terminal  Jobs
~/
   manufacturer   model displ year cyl      trans drv cty hwy fl      class
122      hyundai tiburon   2.7 2008   6 manual(m5)   f  17  24   r subcompact
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
142       nissan altima   2.4 1999   4 manual(m5)   f  21  29   r compact
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
143       nissan altima   2.4 1999   4 auto(l4)   f  19  27   r compact
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
144       nissan altima   2.5 2008   4 auto(av)   f  23  31   r midsize
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
145       nissan altima   2.5 2008   4 manual(m6)   f  23  32   r midsize
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
146       nissan altima   3.5 2008   6 manual(m6)   f  19  27   p midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
147       nissan altima   3.5 2008   6 auto(av)   f  19  26   p midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
148       nissan maxima     3 1999   6 auto(l4)   f  18  26   r midsize
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
149       nissan maxima     3 1999   6 manual(m5)   f  19  25   r midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
150       nissan maxima   3.5 2008   6 auto(av)   f  19  25   p midsize
   manufacturer       model displ year cyl    trans drv cty hwy fl   class
155      pontiac grand prix   3.1 1999   6 auto(l4)   f  18  26   r midsize
   manufacturer       model displ year cyl    trans drv cty hwy fl   class
156      pontiac grand prix   3.8 1999   6 auto(l4)   f  16  26   p midsize
   manufacturer       model displ year cyl    trans drv cty hwy fl   class
157      pontiac grand prix   3.8 1999   6 auto(l4)   f  17  27   r midsize
   manufacturer       model displ year cyl    trans drv cty hwy fl   class
158      pontiac grand prix   3.8 2008   6 auto(l4)   f  18  28   r midsize
   manufacturer       model displ year cyl    trans drv cty hwy fl   class
159      pontiac grand prix   5.3 2008   8 auto(s4)   f  16  25   p midsize
   manufacturer model displ year cyl      trans drv cty hwy fl   class
180       toyota camry   2.2 1999   4 manual(m5)   f  21  29   r midsize
   manufacturer model displ year cyl    trans drv cty hwy fl   class
181       toyota camry   2.2 1999   4 auto(l4)   f  21  27   r midsize
   manufacturer model displ year cyl      trans drv cty hwy fl   class
182       toyota camry   2.4 2008   4 manual(m5)   f  21  31   r midsize
   manufacturer model displ year cyl    trans drv cty hwy fl   class
183       toyota camry   2.4 2008   4 auto(l5)   f  21  31   r midsize
   manufacturer model displ year cyl    trans drv cty hwy fl   class
184       toyota camry     3 1999   6 auto(l4)   f  18  26   r midsize
   manufacturer model displ year cyl      trans drv cty hwy fl   class
185       toyota camry     3 1999   6 manual(m5)   f  18  26   r midsize
   manufacturer model displ year cyl    trans drv cty hwy fl   class
186       toyota camry   3.5 2008   6 auto(s6)   f  19  28   r midsize
   manufacturer        model displ year cyl    trans drv cty hwy fl   class
187       toyota camry solara   2.2 1999   4 auto(l4)   f  21  27   r compact
   manufacturer        model displ year cyl      trans drv cty hwy fl   class
188       toyota camry solara   2.2 1999   4 manual(m5)   f  21  29   r compact
   manufacturer        model displ year cyl      trans drv cty hwy fl   class
189       toyota camry solara   2.4 2008   4 manual(m5)   f  21  31   r compact
   manufacturer        model displ year cyl    trans drv cty hwy fl   class
190       toyota camry solara   2.4 2008   4 auto(s5)   f  22  31   r compact
   manufacturer        model displ year cyl    trans drv cty hwy fl   class
191       toyota camry solara     3 1999   6 auto(l4)   f  18  26   r compact
   manufacturer        model displ year cyl      trans drv cty hwy fl   class
192       toyota camry solara     3 1999   6 manual(m5)   f  18  26   r compact
   manufacturer        model displ year cyl    trans drv cty hwy fl   class
193       toyota camry solara   3.3 2008   6 auto(s5)   f  18  27   r compact
```



```
Console  Terminal  Jobs
~/
   manufacturer   model displ year cyl    trans drv cty hwy fl   class
198      toyota corolla   1.8 2008   4 auto(l4)   f  26  35   r compact
   manufacturer model displ year cyl      trans drv cty hwy fl   class
208   volkswagen   gti     2 1999   4 manual(m5)   f  21  29   r compact
   manufacturer model displ year cyl    trans drv cty hwy fl   class
209   volkswagen   gti     2 1999   4 auto(l4)   f  19  26   r compact
   manufacturer model displ year cyl      trans drv cty hwy fl   class
210   volkswagen   gti     2 2008   4 manual(m6)   f  21  29   p compact
   manufacturer model displ year cyl    trans drv cty hwy fl   class
211   volkswagen   gti     2 2008   4 auto(s6)   f  22  29   p compact
   manufacturer model displ year cyl      trans drv cty hwy fl   class
212   volkswagen   gti   2.8 1999   6 manual(m5)   f  17  24   r compact
   manufacturer model displ year cyl      trans drv cty hwy fl   class
213   volkswagen jetta   1.9 1999   4 manual(m5)   f  33  44   d compact
   manufacturer model displ year cyl      trans drv cty hwy fl   class
214   volkswagen jetta     2 1999   4 manual(m5)   f  21  29   r compact
   manufacturer model displ year cyl    trans drv cty hwy fl   class
215   volkswagen jetta     2 1999   4 auto(l4)   f  19  26   r compact
   manufacturer model displ year cyl    trans drv cty hwy fl   class
216   volkswagen jetta     2 2008   4 auto(s6)   f  22  29   p compact
   manufacturer model displ year cyl      trans drv cty hwy fl   class
217   volkswagen jetta     2 2008   4 manual(m6)   f  21  29   p compact
   manufacturer model displ year cyl    trans drv cty hwy fl   class
218   volkswagen jetta   2.5 2008   5 auto(s6)   f  21  29   r compact
   manufacturer model displ year cyl      trans drv cty hwy fl   class
219   volkswagen jetta   2.5 2008   5 manual(m5)   f  21  29   r compact
   manufacturer model displ year cyl    trans drv cty hwy fl   class
220   volkswagen jetta   2.8 1999   6 auto(l4)   f  16  23   r compact
   manufacturer model displ year cyl      trans drv cty hwy fl   class
221   volkswagen jetta   2.8 1999   6 manual(m5)   f  17  24   r compact
   manufacturer       model displ year cyl      trans drv cty hwy fl      class
222   volkswagen new beetle   1.9 1999   4 manual(m5)   f  35  44   d subcompact
   manufacturer       model displ year cyl    trans drv cty hwy fl      class
223   volkswagen new beetle   1.9 1999   4 auto(l4)   f  29  41   d subcompact
   manufacturer       model displ year cyl      trans drv cty hwy fl      class
224   volkswagen new beetle     2 1999   4 manual(m5)   f  21  29   r subcompact
   manufacturer       model displ year cyl    trans drv cty hwy fl      class
225   volkswagen new beetle     2 1999   4 auto(l4)   f  19  26   r subcompact
   manufacturer       model displ year cyl      trans drv cty hwy fl      class
226   volkswagen new beetle   2.5 2008   5 manual(m5)   f  20  28   r subcompact
   manufacturer       model displ year cyl    trans drv cty hwy fl      class
227   volkswagen new beetle   2.5 2008   5 auto(s6)   f  20  29   r subcompact
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
228   volkswagen passat   1.8 1999   4 manual(m5)   f  21  29   p midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
229   volkswagen passat   1.8 1999   4 auto(l5)   f  18  29   p midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
230   volkswagen passat     2 2008   4 auto(s6)   f  19  28   p midsize
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
231   volkswagen passat     2 2008   4 manual(m6)   f  21  29   p midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
232   volkswagen passat   2.8 1999   6 auto(l5)   f  16  26   p midsize
   manufacturer  model displ year cyl      trans drv cty hwy fl   class
233   volkswagen passat   2.8 1999   6 manual(m5)   f  18  26   p midsize
   manufacturer  model displ year cyl    trans drv cty hwy fl   class
234   volkswagen passat   3.6 2008   6 auto(s6)   f  17  26   p midsize
>
```

QUESTION 3 – R-CODE:

Exam_1_Janani.R

Source on Save

```
27  # Question 3 - It has no missing values
28
29  filename = file.choose()
30  data = read.table(filename,TRUE,",",na.string="*")
31  CarP = data.frame(data)
32  any(is.na(CarP))     # to check if any column has missing value
33
```

OUTPUT 3:

Exam_1_Janani.R

Source on Save

```
26
27  # Question 3 - It has no missing values
```

27:40 (Top Level)

Console | Terminal | Jobs

```
> # Question 3 - It has no missing values
>
> filename = file.choose()
> data = read.table(filename,TRUE,",",na.string="*")
> CarP = data.frame(data)
> any(is.na(CarP))     # to check if any column has missing value
[1] FALSE
>
```

QUESTION 4 – R-CODE:

Exam_1_Janani.R

Source on Save

```
34  # Question 4
35
36  filename = file.choose()
37  data = read.table(filename,TRUE,",",na.string="*")
38  CarP = data.frame(data)
39  CarP$Ratio = with(CarP,hwy/cty)  # to find ration between hwy and cty and creates a column Ratio
40  print(CarP$Ratio)
41
```

OUTPUT 4:

Exam_1_Janani.R

Source on Save | Run

39:37 (Top Level)

Console | Terminal | Jobs

```
> # Question 4
>
> filename = file.choose()
> data = read.table(filename,TRUE,",",na.string="*")
> CarP = data.frame(data)
> CarP$Ratio = with(CarP,hwy/cty)  # to find ration between hwy and cty and creates a column Ratio
> print(CarP$Ratio)
  [1] 1.611111 1.380952 1.550000 1.428571 1.625000 1.444444 1.500000 1.444444 1.562500 1.400000 1.421053 1.666667 1.470588 1.470588 1.666667
 [16] 1.600000 1.470588 1.437500 1.428571 1.363636 1.428571 1.307692 1.416667 1.625000 1.533333 1.625000 1.666667 1.600000 1.357143 1.272727
 [31] 1.363636 1.214286 1.421053 1.363636 1.444444 1.611111 1.529412 1.333333 1.411765 1.375000 1.375000 1.411765 1.411765 1.545455 1.466667
 [46] 1.400000 1.437500 1.437500 1.266667 1.285714 1.307692 1.214286 1.357143 1.357143 1.333333 1.545455 1.363636 1.307692 1.307692 1.333333
 [61] 1.307692 1.454545 1.384615 1.363636 1.333333 1.333333 1.307692 1.307692 1.333333 1.333333 1.363636 1.454545 1.307692 1.363636 1.545455
 [76] 1.545455 1.500000 1.214286 1.266667 1.214286 1.461538 1.461538 1.307692 1.214286 1.214286 1.230769 1.230769 1.307692 1.363636 1.307692
 [91] 1.444444 1.388889 1.529412 1.500000 1.400000 1.466667 1.533333 1.466667 1.428571 1.178571 1.333333 1.280000 1.260870 1.333333 1.307692
[106] 1.440000 1.500000 1.380952 1.444444 1.500000 1.428571 1.476190 1.444444 1.444444 1.473684 1.368421 1.526316 1.400000 1.350000 1.411765
[121] 1.500000 1.411765 1.294118 1.266667 1.333333 1.214286 1.333333 1.357143 1.384615 1.272727 1.363636 1.500000 1.500000 1.363636 1.545455
[136] 1.454545 1.500000 1.214286 1.461538 1.461538 1.307692 1.380952 1.421053 1.347826 1.391304 1.421053 1.368421 1.444444 1.315789 1.315789
[151] 1.214286 1.133333 1.428571 1.500000 1.444444 1.625000 1.588235 1.555556 1.562500 1.388889 1.333333 1.350000 1.315789 1.300000 1.277778
[166] 1.238095 1.368421 1.368421 1.368421 1.250000 1.350000 1.315789 1.350000 1.333333 1.250000 1.266667 1.133333 1.250000 1.214286 1.380952
[181] 1.285714 1.476190 1.476190 1.444444 1.444444 1.473684 1.285714 1.380952 1.476190 1.409091 1.444444 1.444444 1.500000 1.250000 1.375000
[196] 1.346154 1.321429 1.346154 1.363636 1.384615 1.333333 1.250000 1.294118 1.133333 1.266667 1.200000 1.250000 1.380952 1.368421 1.380952
[211] 1.318182 1.411765 1.333333 1.380952 1.368421 1.318182 1.380952 1.380952 1.380952 1.437500 1.411765 1.257143 1.413793 1.380952 1.368421
[226] 1.400000 1.450000 1.380952 1.611111 1.473684 1.380952 1.625000 1.444444 1.529412
>
```

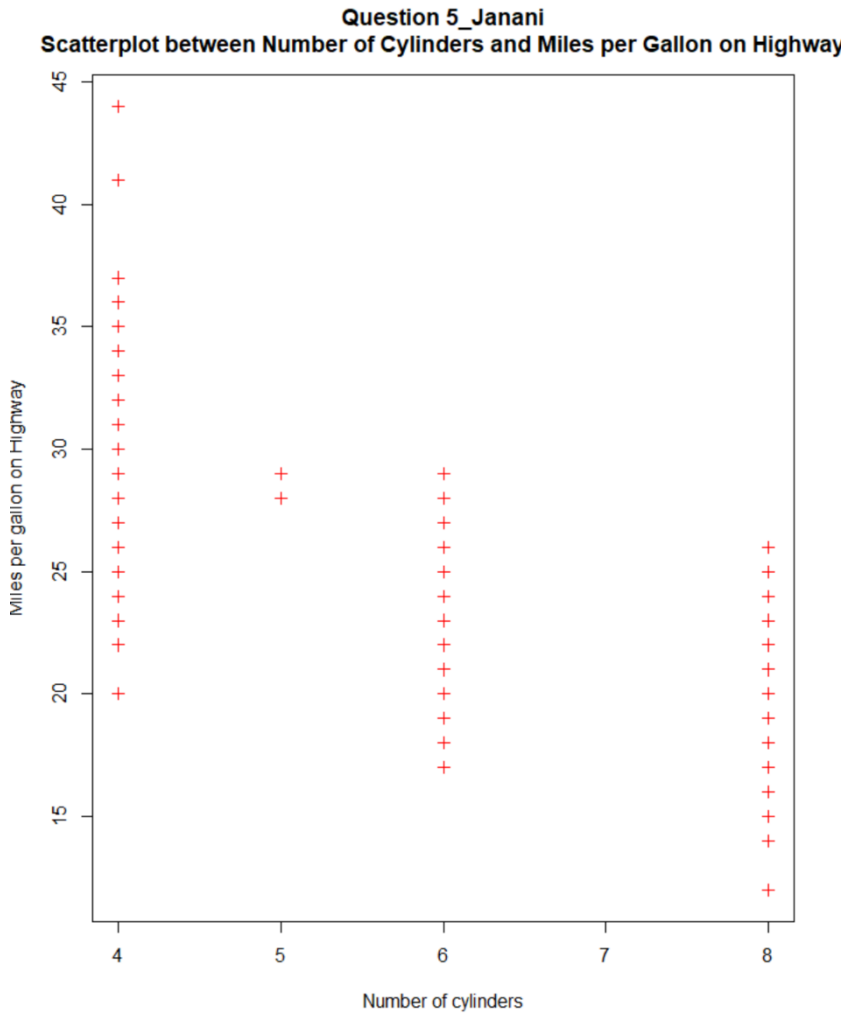
QUESTION 5 – R-CODE:

Exam_1_Janani.R

Source on Save

```
41
42  # Question 5
43
44  filename = file.choose()
45  data = read.table(filename,TRUE,",",na.string="*")
46  CarP = data.frame(data)
47  #creates scatter plot
48  plot(CarP$cyl,CarP$hwy,xlab="Number of cylinders",ylab="Miles per gallon on Highway",
49       main="Question 5_Janani\nScatterplot between Number of Cylinders and Miles per Gallon on Highway",
50       pch=3,col="red")
51
```

OUTPUT 5:



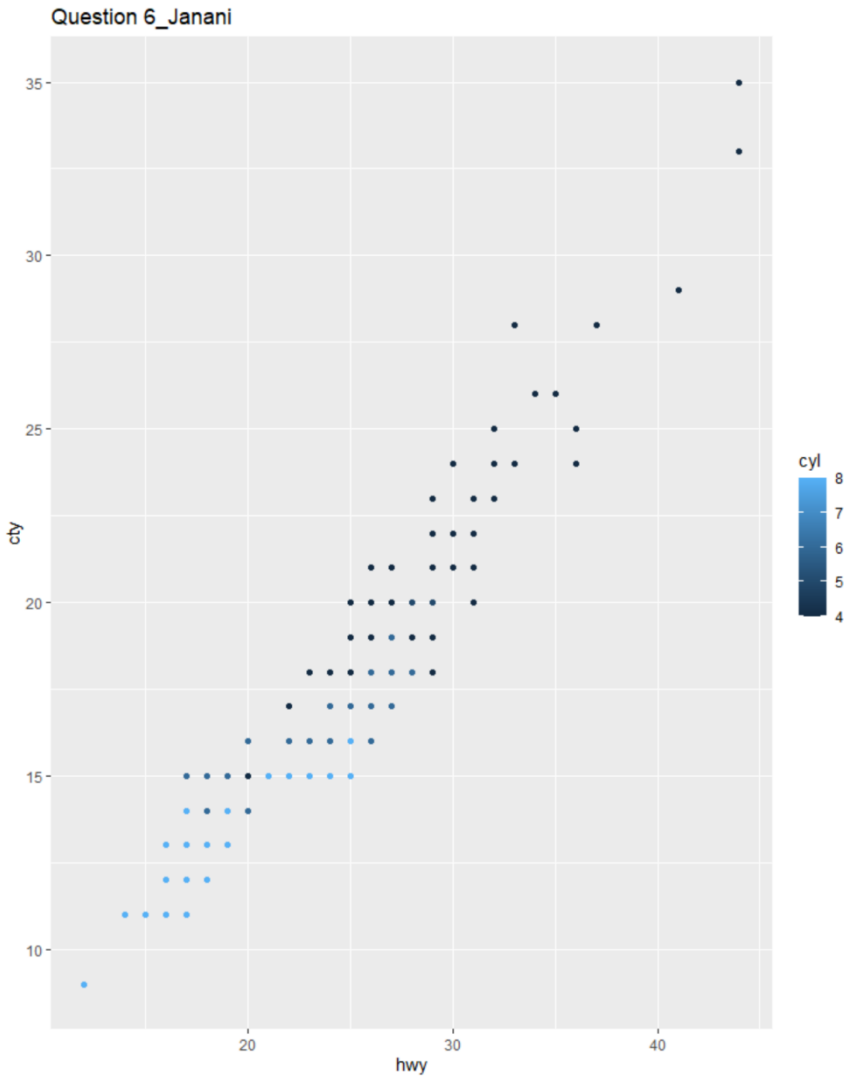
QUESTION 6 – R-CODE:

Exam_1_Janani.R

Source on Save

```
52  # Question 6
53  library(ggplot2)
54  filename = file.choose()
55  data = read.table(filename,TRUE,",",na.string="*")
56  CarP = data.frame(data)
57  graph <-ggplot(CarP,aes(x=hwy,y=cty))  #plot between hwy and cty
58  print(graph+geom_point(aes(color=cyl))+ggtitle("Question 6_Janani"))   #Plots agains cyl
59
```

OUTPUT 6:



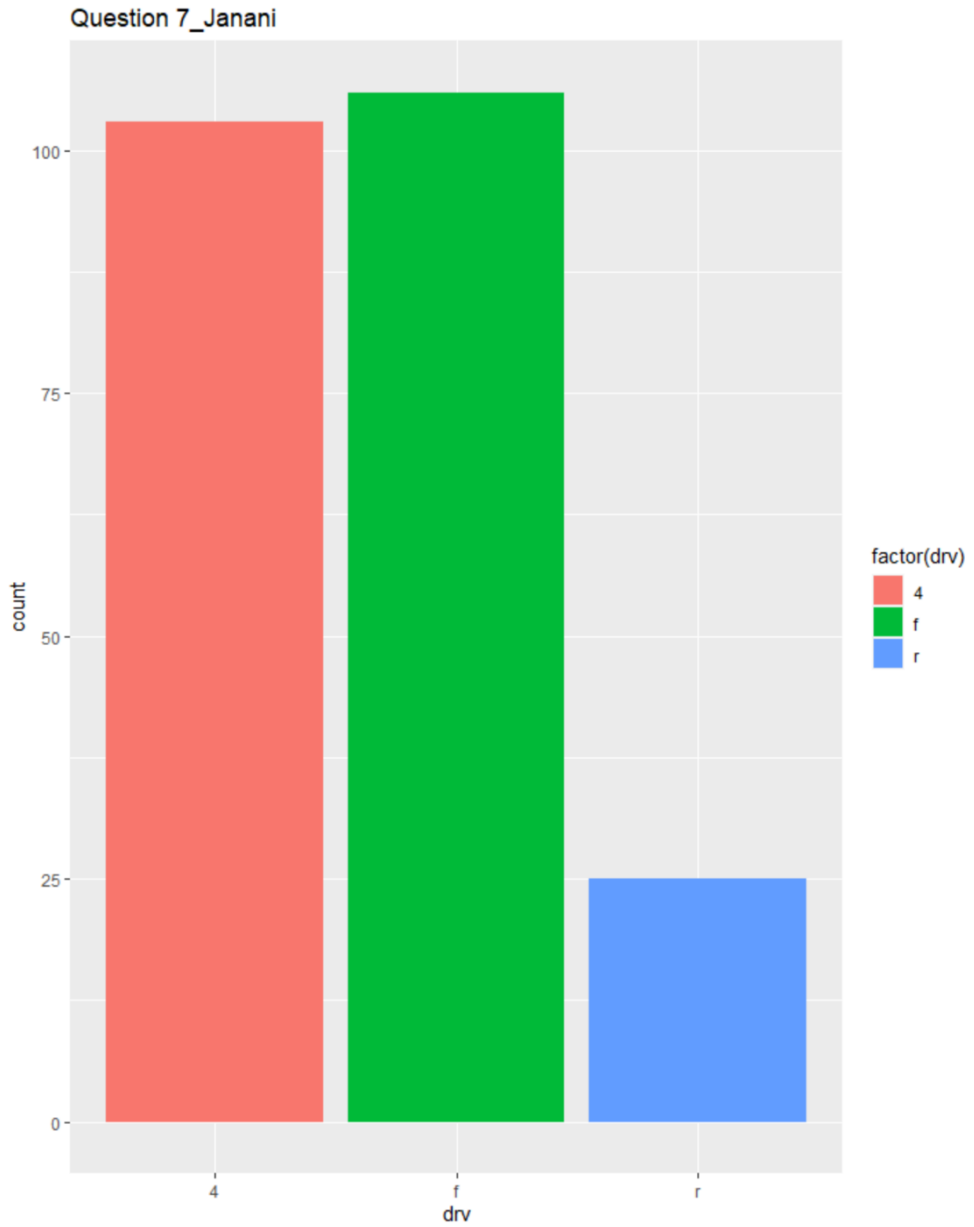
QUESTION 7 – R-CODE:

Exam_1_Janani.R

Source on Save

```
60  # Question 7
61  library(ggplot2)
62  filename = file.choose()
63  data = read.table(filename,TRUE,",",na.string="*")
64  CarP = data.frame(data)
65  graph <-ggplot(data=CarP,aes(x=drv)) +
66    geom_histogram(aes(y = ..count..),stat="count")   #plots an histogram
67  print(graph+geom_bar(aes(fill=factor(drv)))+ggtitle("Question 7_Janani"))   #plots against drive type
68
```

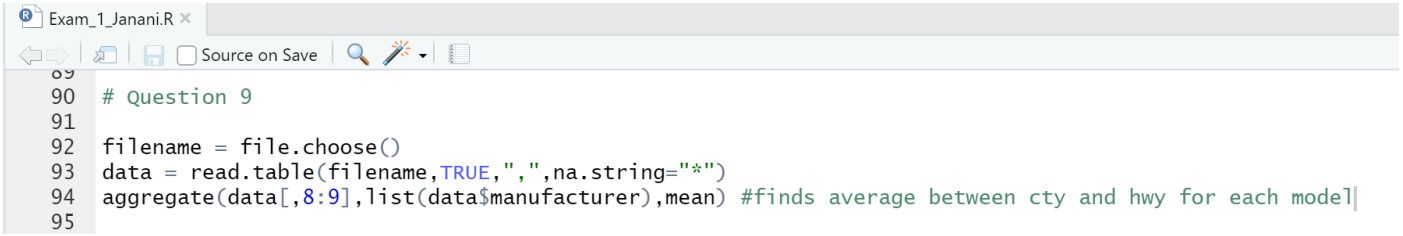
OUTPUT 7:



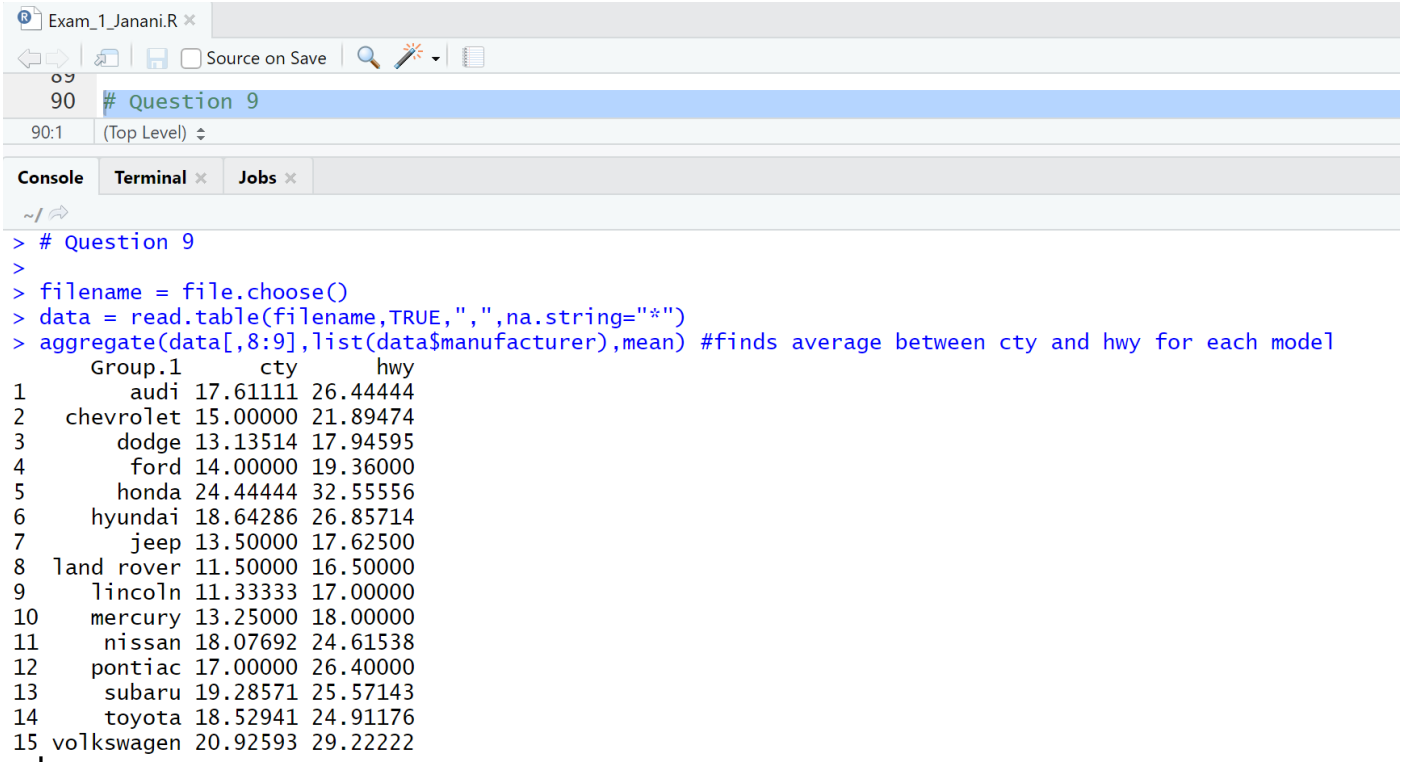
QUESTION 8 – R-CODE:

OUTPUT 8:

QUESTION 9 – R-CODE:



OUTPUT 9:



QUESTION 10 – R-CODE:

```
Exam_1_Janani.R
Source on Save | Run | Sourc
 96  # Question 10
 97  library(dplyr)
 98  filename = file.choose()
 99  data = read.table(filename,TRUE,",",na.string="*")
100  CarP = data.frame(data)
101  output = CarP %>% group_by(manufacturer) %>% count(manufacturer,cyl) %>% filter(n==max(n)) #group by manufacturer and counts cyl for each
102                                                                                              #then filters the maximum out of it
103  output[1:2]
104
105
```

OUTPUT 10:

```
Exam_1_Janani.R
Source on Save | Run
 96  # Question 10
96:14  (Top Level)

Console  Terminal  Jobs
~/

> # Question 10
> library(dplyr)
> filename = file.choose()
> data = read.table(filename,TRUE,",",na.string="*")
> CarP = data.frame(data)
> output = CarP %>% group_by(manufacturer) %>% count(manufacturer,cyl) %>% filter(n==max(n)) #group by manufacturer and counts cyl for each
>                                                                                             #then filters the maximum out of it
> output[1:2]
# A tibble: 16 x 2
# Groups:   manufacturer [15]
   manufacturer   cyl
   <fct>        <int>
 1 audi             6
 2 chevrolet        8
 3 dodge            8
 4 ford             8
 5 honda            4
 6 hyundai          4
 7 jeep             8
 8 land rover       8
 9 lincoln          8
10 mercury          6
11 mercury          8
12 nissan           6
13 pontiac          6
14 subaru           4
15 toyota           4
16 volkswagen       4
```