

R Notebook

```
library(RMySQL)
```

```
## Loading required package: DBI
```

```
mydb = dbConnect(MySQL(), user='root', password='Why940308.', dbname='cs5200', host='127.0.0.1')
```

```
#data preprocessing
```

```
SET GLOBAL local_infile = true;
```

```
data = read.csv(file = 'BirdStrikesData.csv')
```

```
head(data,20)
```

##	Record.ID	Aircraft..Type	Airport..Name	Altitude.bin
## 1	202152	Airplane	LAGUARDIA NY	> 1000 ft
## 2	208159	Airplane	DALLAS/FORT WORTH INTL ARPT	< 1000 ft
## 3	207601	Airplane	LAKEFRONT AIRPORT	< 1000 ft
## 4	215953	Airplane	SEATTLE-TACOMA INTL	< 1000 ft
## 5	219878	Airplane	NORFOLK INTL	< 1000 ft
## 6	218432	Airplane	GUAYAQUIL/S BOLIVAR	< 1000 ft
## 7	221697	Airplane	NEW CASTLE COUNTY	< 1000 ft
## 8	236635	Airplane	WASHINGTON DULLES INTL ARPT	< 1000 ft
## 9	207369	Airplane	ATLANTA INTL	< 1000 ft
## 10	204371	Airplane	ORLANDO SANFORD INTL AIRPORT	< 1000 ft
## 11	201589	Airplane	ONTARIO INTL ARPT	< 1000 ft
## 12	205958	Airplane	CHICAGO O'HARE INTL ARPT	> 1000 ft
## 13	200220	Airplane	GROTON-NEW LONDON AR	< 1000 ft
## 14	200219	Airplane	SPIRIT OF ST LOUIS	> 1000 ft
## 15	203756	Airplane	THEODORE FRANCIS GREEN STATE	< 1000 ft
## 16	204061	Airplane	KANSAS CITY INTL	< 1000 ft
## 17	202604	Airplane	LIHUE ARPT	< 1000 ft
## 18	201044	Airplane	PHOENIX SKY HARBOR	< 1000 ft
## 19	202254	Airplane	NASHVILLE INTL	< 1000 ft
## 20	205346	Airplane	JIM HAMILTON L B OWENS ARPT	< 1000 ft

##	Aircraft..Make.Model	Wildlife..Number.struck	Wildlife..Number.Struck.Actual
## 1	B-737-400	Over 100	859
## 2	MD-80	Over 100	424
## 3	C-500	Over 100	261
## 4	B-737-400	Over 100	806
## 5	CL-RJ100/200	Over 100	942
## 6	A-300	Over 100	537
## 7	LEARJET-25	Over 100	227
## 8	A-320	Over 100	320
## 9	DC-9-30	2 to 10	9
## 10	A-330	2 to 10	4
## 11	A-320	2 to 10	3
## 12	FOKKER F100	2 to 10	9
## 13	C-421	2 to 10	2

## 14	C-560	2 to 10	2
## 15	B-737-200	2 to 10	5
## 16	MD-80	2 to 10	5
## 17	DC-9-50	2 to 10	9
## 18	B-737	2 to 10	9
## 19	B-737-400	2 to 10	5
## 20	C-560	2 to 10	6
##	Effect..Impact.to.flight	FlightDate	Effect..Indicated.Damage
## 1	Engine Shut Down	11/23/2000 0:00	Caused damage
## 2	None	7/25/2001 0:00	Caused damage
## 3	None	9/14/2001 0:00	No damage
## 4	Precautionary Landing	9/5/2002 0:00	No damage
## 5	None	6/23/2003 0:00	No damage
## 6	None	7/24/2003 0:00	No damage
## 7	Other	8/17/2003 0:00	Caused damage
## 8	Other	3/1/2006 0:00	Caused damage
## 9	Aborted Take-off	1/6/2000 0:00	No damage
## 10	None	1/7/2000 0:00	No damage
## 11	None	1/8/2000 0:00	No damage
## 12	None	1/20/2000 0:00	Caused damage
## 13	None	1/30/2000 0:00	No damage
## 14	None	1/30/2000 0:00	No damage
## 15	None	1/30/2000 0:00	No damage
## 16	None	2/1/2000 0:00	No damage
## 17	None	2/11/2000 0:00	No damage
## 18	None	2/12/2000 0:00	No damage
## 19	None	2/18/2000 0:00	No damage
## 20	None	2/23/2000 0:00	Caused damage
##	Aircraft..Number.of.engines.	Aircraft..Airline.Operator	Origin.State
## 1	2	US AIRWAYS*	New York
## 2	2	AMERICAN AIRLINES	Texas
## 3	2	BUSINESS	Louisiana
## 4	2	ALASKA AIRLINES	Washington
## 5	2	COMAIR AIRLINES	Virginia
## 6	2	AMERICAN AIRLINES	N/A
## 7	2	BUSINESS	Delaware
## 8	2	UNITED AIRLINES	DC
## 9	2	AIRTRAN AIRWAYS	Georgia
## 10	2	AIRTOURS INTL	Florida
## 11	2	AMERICA WEST AIRLINES	California
## 12	2	AMERICAN AIRLINES	Illinois
## 13	2	BUSINESS	Connecticut
## 14	2	EXECUTIVE JET AVIATION	Missouri
## 15	2	US AIRWAYS*	Rhode Island
## 16	2	TRANS WORLD AIRLINES	Missouri
## 17	2	HAWAIIAN AIR	Hawaii
## 18	2	AMERICA WEST AIRLINES	Arizona
## 19	2	US AIRWAYS*	Tennessee
## 20	2	BUSINESS	South Carolina
##	When..Phase.of.flight	Conditions..Precipitation	
## 1	Climb	None	
## 2	Landing Roll	None	
## 3	Approach	None	
## 4	Climb	None	

## 5	Approach	None
## 6	Take-off run	None
## 7	Climb	None
## 8	Approach	None
## 9	Take-off run	None
## 10	Landing Roll	None
## 11	Approach	None
## 12	Approach	None
## 13	Landing Roll	None
## 14	Approach	Snow
## 15	Approach	None
## 16	Approach	None
## 17	Take-off run	None
## 18	Landing Roll	None
## 19	Climb	None
## 20	Climb	None

##	Remains.of.wildlife.collected.	Remains.of.wildlife.sent.to.Smithsonian
----	--------------------------------	---

## 1	FALSE	FALSE
## 2	FALSE	FALSE
## 3	FALSE	FALSE
## 4	TRUE	FALSE
## 5	FALSE	FALSE
## 6	FALSE	FALSE
## 7	TRUE	TRUE
## 8	TRUE	FALSE
## 9	FALSE	FALSE
## 10	FALSE	FALSE
## 11	FALSE	FALSE
## 12	FALSE	FALSE
## 13	FALSE	FALSE
## 14	FALSE	FALSE
## 15	FALSE	FALSE
## 16	FALSE	FALSE
## 17	FALSE	FALSE
## 18	FALSE	FALSE
## 19	FALSE	FALSE
## 20	FALSE	FALSE

##

1 FLT 753. PILOT REPTD A HUNDRED BIRDS ON UNKN TYPE. #1 ENG WAS SHUT DOWN AND DIVERTED TO EWR. SLI

2

3

4 NOTAM WARNING. 26 BIRDS HIT THE A/C, FORCING AN EMERGENCY LDG. 77 BIRDS WERE FOUND DEAD ON RWY/TW

5

6

7

8 WS ASSISTED IN CLEAN-UP OF 273 STARLINGS AND 1 BROWN-HEADED COWBIRD FROM RWY THRESHOLD. PHOTOS OF

9

10

11

12 JUST OUTSIDE OF WILLT ON VISUAL APCH, WE FLEW THRU A FLOCK OF GEESE. WE HIT AT LEAST 1, HEARD T

13

14

15

16

```

## 17
## 18
## 19
## 20
##      Wildlife..Size Conditions..Sky      Wildlife..Species
## 1      Medium      No Cloud Unknown bird - medium
## 2      Small      Some Cloud      Rock pigeon
## 3      Small      No Cloud      European starling
## 4      Small      Some Cloud      European starling
## 5      Small      No Cloud      European starling
## 6      Small      No Cloud Unknown bird - small
## 7      Small      No Cloud      European starling
## 8      Small      Some Cloud      European starling
## 9      Small      Some Cloud      Rock pigeon
## 10     Small      Some Cloud Unknown bird - small
## 11     Small      Some Cloud      Rock pigeon
## 12     Large      No Cloud      Canada goose
## 13     Small      Overcast Unknown bird - small
## 14     Small      Overcast Unknown bird - small
## 15     Small      No Cloud      European starling
## 16     Large      Some Cloud      Snow goose
## 17     Small      No Cloud      Black-headed munia
## 18     Small      Overcast      Rock pigeon
## 19     Small      Some Cloud      European starling
## 20     Small      Some Cloud      Rock pigeon
##      Pilot.warned.of.birds.or.wildlife. Cost..Total.. Feet.above.ground
## 1      N      30,736      1,500
## 2      Y      0      0
## 3      N      0      50
## 4      Y      0      50
## 5      N      0      50
## 6      N      0      0
## 7      N      1,481,711      150
## 8      Y      1,483,141      100
## 9      N      0      0
## 10     N      0      0
## 11     N      0      200
## 12     N      0      1,700
## 13     N      0      0
## 14     N      0      1,800
## 15     N      0      50
## 16     Y      0      500
## 17     Y      0      0
## 18     N      0      0
## 19     N      0      800
## 20     N      0      500
##      Number.of.people.injured Is.Aircraft.Large.
## 1      0      Yes
## 2      0      No
## 3      0      No
## 4      0      Yes
## 5      0      No
## 6      0      No
## 7      0      No

```

```
## 8          0          No
## 9          0          No
## 10         0          No
## 11         0          No
## 12         0          No
## 13         0          No
## 14         0          No
## 15         0          Yes
## 16         0          No
## 17         0          No
## 18         0          Yes
## 19         0          Yes
## 20         0          No
```

#change impact to boolean type

```
data1 = data.frame(data$Record.ID,data$FlightDate,data$Origin.State,data$Aircraft..Airline.Operator,da
```

```
a = nrow(data1['data.Effect..Indicated.Damage'])
```

```
count = 0
```

```
for(i in 1:a){
```

```
  if (data1[i,'data.Effect..Indicated.Damage'] == "No damage"){
```

```
    data1[i,'data.Effect..Indicated.Damage'] = 0
```

```
  }
```

```
  else{
```

```
    data1[i,'data.Effect..Indicated.Damage'] = 1
```

```
  }
```

```
}
```

```
head(data1)
```

```
## data.Record.ID data.FlightDate data.Origin.State
## 1      202152 11/23/2000 0:00      New York
## 2      208159  7/25/2001 0:00      Texas
## 3      207601  9/14/2001 0:00      Louisiana
## 4      215953  9/5/2002 0:00      Washington
## 5      219878  6/23/2003 0:00      Virginia
## 6      218432  7/24/2003 0:00      N/A
## data.Aircraft..Airline.Operator data.Aircraft..Make.Model
## 1              US AIRWAYS*          B-737-400
## 2      AMERICAN AIRLINES          MD-80
## 3              BUSINESS          C-500
## 4      ALASKA AIRLINES          B-737-400
## 5      COMAIR AIRLINES          CL-RJ100/200
## 6      AMERICAN AIRLINES          A-300
## data.When..Phase.of.flight data.Effect..Indicated.Damage data.Conditions..Sky
## 1              Climb          1      No Cloud
## 2      Landing Roll          1      Some Cloud
## 3              Approach          0      No Cloud
## 4              Climb          0      Some Cloud
## 5      Approach          0      No Cloud
## 6      Take-off run          0      No Cloud
```

change cond as 1,2,3 be like a foreign key

```
b = nrow(data1['data.Conditions..Sky'])
print(b)
```

```
## [1] 25558
```

```
for(i in 1:b){
  if(data1[i,'data.Conditions..Sky'] == 'No Cloud'){
    data1[i,'data.Conditions..Sky'] = 1
  }
  else if(data1[i,'data.Conditions..Sky'] == "Some Cloud"){
    data1[i,'data.Conditions..Sky'] = 2
  }
  else{
    data1[i,'data.Conditions..Sky'] = 3
  }
}
head(data1)
```

```
## data.Record.ID data.FlightDate data.Origin.State
## 1          202152 11/23/2000 0:00          New York
## 2          208159  7/25/2001 0:00           Texas
## 3          207601  9/14/2001 0:00      Louisiana
## 4          215953  9/5/2002 0:00      Washington
## 5          219878  6/23/2003 0:00        Virginia
## 6          218432  7/24/2003 0:00           N/A
## data.Aircraft..Airline.Operator data.Aircraft..Make.Model
## 1                US AIRWAYS*          B-737-400
## 2          AMERICAN AIRLINES          MD-80
## 3                BUSINESS          C-500
## 4          ALASKA AIRLINES          B-737-400
## 5          COMAIR AIRLINES          CL-RJ100/200
## 6          AMERICAN AIRLINES          A-300
## data.When..Phase.of.flight data.Effect..Indicated.Damage data.Conditions..Sky
## 1                Climb                1                1
## 2          Landing Roll                1                2
## 3          Approach                0                1
## 4                Climb                0                2
## 5          Approach                0                1
## 6          Take-off run                0                1
```

#change column name same with table Incidents.

```
colnames(data1) <- c( 'iid' ,
  'time',
  'origin' ,
  'airline' ,
  'aircraft' ,
  'flightPhase',
  'impact',
  'cond')
```

#Unified phases

```

data11 = data1

unique(data11["flightPhase"])

##      flightPhase
## 1      Climb
## 2   Landing Roll
## 3      Approach
## 6   Take-off run
## 31      Descent
## 130
## 369      Taxi
## 2468      Parked

e = nrow(data11["flightPhase"])
for(i in 1:e){
  if(data11[i,"flightPhase"]== "Take-off run"){
    data11[i,"flightPhase"] = "takeoff"
  }
  else if(data11[i,"flightPhase"]== "Landing Roll"){
    data11[i,"flightPhase"] = "landing"
  }
  else if (data11[i,"flightPhase"]== "Climb" || data11[i,"flightPhase"]== "Descent" || data11[i,"flightPhase"]== "Approach"){
    data11[i,"flightPhase"] = "inflight"
  }
  else{
    data11[i,"flightPhase"] = "unknown"
  }
}

head(data11)

##      iid      time      origin      airline      aircraft flightPhase
## 1 202152 11/23/2000 0:00   New York      US AIRWAYS*    B-737-400   inflight
## 2 208159  7/25/2001 0:00    Texas AMERICAN AIRLINES    MD-80      landing
## 3 207601  9/14/2001 0:00 Louisiana      BUSINESS      C-500      inflight
## 4 215953  9/5/2002 0:00 Washington ALASKA AIRLINES  B-737-400   inflight
## 5 219878  6/23/2003 0:00  Virginia  COMAIR AIRLINES CL-RJ100/200 inflight
## 6 218432  7/24/2003 0:00      N/A AMERICAN AIRLINES    A-300      takeoff
##      impact cond
## 1      1      1
## 2      1      2
## 3      0      1
## 4      0      2
## 5      0      1
## 6      0      1

#set table for conditions.
data2 = data.frame(data$Conditions..Sky)
data3 = unique(data2["data.Conditions..Sky"])

data3$cid <- c("1","2","3")
data3$explanation <- 'none'

#change data name as table conditions.

```

```
colnames(data3) <- c( 'condition' ,
  'cid',
  'explanation')

write.csv(data3,"data3.csv", row.names = FALSE)

#creat aid and form the table Airports.
data4 = data.frame(data$Airport..Name,data$Origin.State)
head(data4)
```

```
##           data.Airport..Name data.Origin.State
## 1           LAGUARDIA NY           New York
## 2 DALLAS/FORT WORTH INTL ARPT           Texas
## 3           LAKEFRONT AIRPORT           Louisiana
## 4           SEATTLE-TACOMA INTL           Washington
## 5           NORFOLK INTL           Virginia
## 6           GUAYAQUIL/S BOLIVAR           N/A

data5 = data4[!duplicated(data4["data.Airport..Name"]),]
data5$id = 1:nrow(data5)
data5$code = "none"
```

#out put csv for Airports table.

```
colnames(data5) <- c( 'airportName' ,
  'state',
  'aid',
  'airportCode')
head(data5)

##           airportName      state aid airportCode
## 1           LAGUARDIA NY      New York   1         none
## 2 DALLAS/FORT WORTH INTL ARPT      Texas   2         none
## 3           LAKEFRONT AIRPORT      Louisiana   3         none
## 4           SEATTLE-TACOMA INTL      Washington   4         none
## 5           NORFOLK INTL      Virginia   5         none
## 6           GUAYAQUIL/S BOLIVAR      N/A   6         none

write.csv(data5,"data5.csv", row.names = FALSE)
```

#set up aid to Incidents table. Take long time to run!

```
datan = data

c = nrow(datan['Airport..Name'])
d = nrow(data5['airportName'])
datan$aid = "none"
for(i in 1:c){
  for(j in 1:d){
    if(datan[i,'Airport..Name']==data5[j,'airportName']){
      datan[i,'aid'] = data5[j,"aid"]
    }
  }
}
head(datan)
```


##	Record.ID	Aircraft..Type	Airport..Name	Altitude.bin
## 1	202152	Airplane	LAGUARDIA NY	> 1000 ft
## 2	208159	Airplane	DALLAS/FORT WORTH INTL ARPT	< 1000 ft
## 3	207601	Airplane	LAKEFRONT AIRPORT	< 1000 ft
## 4	215953	Airplane	SEATTLE-TACOMA INTL	< 1000 ft
## 5	219878	Airplane	NORFOLK INTL	< 1000 ft
## 6	218432	Airplane	GUAYAQUIL/S BOLIVAR	< 1000 ft
##	Aircraft..Make.Model	Wildlife..Number.struck	Wildlife..Number.Struck.Actual	
## 1	B-737-400	Over 100	859	
## 2	MD-80	Over 100	424	
## 3	C-500	Over 100	261	
## 4	B-737-400	Over 100	806	
## 5	CL-RJ100/200	Over 100	942	
## 6	A-300	Over 100	537	
##	Effect..Impact.to.flight	FlightDate	Effect..Indicated.Damage	
## 1	Engine Shut Down	11/23/2000 0:00	Caused damage	
## 2	None	7/25/2001 0:00	Caused damage	
## 3	None	9/14/2001 0:00	No damage	
## 4	Precautionary Landing	9/5/2002 0:00	No damage	
## 5	None	6/23/2003 0:00	No damage	
## 6	None	7/24/2003 0:00	No damage	
##	Aircraft..Number.of.engines.	Aircraft..Airline.Operator	Origin.State	
## 1	2	US AIRWAYS*	New York	
## 2	2	AMERICAN AIRLINES	Texas	
## 3	2	BUSINESS	Louisiana	
## 4	2	ALASKA AIRLINES	Washington	
## 5	2	COMAIR AIRLINES	Virginia	
## 6	2	AMERICAN AIRLINES	N/A	
##	When..Phase.of.flight	Conditions..Precipitation		
## 1	Climb	None		
## 2	Landing Roll	None		
## 3	Approach	None		
## 4	Climb	None		
## 5	Approach	None		
## 6	Take-off run	None		
##	Remains.of.wildlife.collected.	Remains.of.wildlife.sent.to.Smithsonian		
## 1	FALSE	FALSE		
## 2	FALSE	FALSE		
## 3	FALSE	FALSE		
## 4	TRUE	FALSE		
## 5	FALSE	FALSE		
## 6	FALSE	FALSE		
##				
## 1	FLT 753. PILOT REPTD A HUNDRED BIRDS ON UNKN TYPE. #1 ENG WAS SHUT DOWN AND DIVERTED TO EWR. SLIGHTLY			
## 2				
## 3				
## 4	NOTAM WARNING. 26 BIRDS HIT THE A/C, FORCING AN EMERGENCY LDG. 77 BIRDS WERE FOUND DEAD ON RWY/TWY			
## 5				
## 6				
##	Wildlife..Size	Conditions..Sky	Wildlife..Species	
## 1	Medium	No Cloud	Unknown bird - medium	
## 2	Small	Some Cloud	Rock pigeon	
## 3	Small	No Cloud	European starling	
## 4	Small	Some Cloud	European starling	

```
## 5      Small      No Cloud      European starling
## 6      Small      No Cloud      Unknown bird - small
## Pilot.warned.of.birds.or.wildlife. Cost..Total.. Feet.above.ground
## 1              N      30,736      1,500
## 2              Y      0      0
## 3              N      0      50
## 4              Y      0      50
## 5              N      0      50
## 6              N      0      0
## Number.of.people.injured Is.Aircraft.Large. aid
## 1              0      Yes 1
## 2              0      No 2
## 3              0      No 3
## 4              0      Yes 4
## 5              0      No 5
## 6              0      No 6
```

```
data11$aid = datan[,"aid"]
head(data11)
```

```
##      iid      time      origin      airline      aircraft flightPhase
## 1 202152 11/23/2000 0:00 New York      US AIRWAYS*      B-737-400      inflight
## 2 208159 7/25/2001 0:00 Texas      AMERICAN AIRLINES      MD-80      landing
## 3 207601 9/14/2001 0:00 Louisiana      BUSINESS      C-500      inflight
## 4 215953 9/5/2002 0:00 Washington      ALASKA AIRLINES      B-737-400      inflight
## 5 219878 6/23/2003 0:00 Virginia      COMAIR AIRLINES      CL-RJ100/200      inflight
## 6 218432 7/24/2003 0:00 N/A      AMERICAN AIRLINES      A-300      takeoff
## impact cond aid
## 1      1      1      1
## 2      1      2      2
## 3      0      1      3
## 4      0      2      4
## 5      0      1      5
## 6      0      1      6
```

```
data12 = data11
```

```
data12 = data11
```

```
for(i in 1:nrow(data12['time'])){
  if(data12[i,"time"] != ""){
    f = data12[i,"time"]

    m <- strsplit(f," ",fixed=T)

    y = matrix(unlist(m), ncol=2, byrow=TRUE)

    data12[i,"time"] = y[1,1]
  }
}
```

```
head(data12)
```

```
##      iid      time      origin      airline      aircraft flightPhase
```

```
## 1 202152 11/23/2000 New York US AIRWAYS* B-737-400 inflight
## 2 208159 7/25/2001 Texas AMERICAN AIRLINES MD-80 landing
## 3 207601 9/14/2001 Louisiana BUSINESS C-500 inflight
## 4 215953 9/5/2002 Washington ALASKA AIRLINES B-737-400 inflight
## 5 219878 6/23/2003 Virginia COMAIR AIRLINES CL-RJ100/200 inflight
## 6 218432 7/24/2003 N/A AMERICAN AIRLINES A-300 takeoff
## impact cond aid
## 1 1 1 1
## 2 1 2 2
## 3 0 1 3
## 4 0 2 4
## 5 0 1 5
## 6 0 1 6
```

#out put csv for Incidents table.

```
write.csv(data12,"data1.csv", row.names = FALSE)
```

#create tables

```
drop table if exists Airports
```

```
drop table if exists conditions
```

```
drop table if exists Incidents
```

```
create table Airports(
  aid int not null,
  airportName Text ,
  airportCode Text,
  state text ,
  primary key (aid)
)
```

```
create table conditions(
  `condition` Text,
  cid int not null,
  explanation Text,
  primary key (cid)
);
```

```
create table Incidents(
  iid int not null,
  aid int,
  time date,
  origin Text,
  airline Text,
  aircraft Text,
  flightPhase Text,
  impact BOOLEAN,
  cond int,
  primary key (iid),
  foreign key(aid) references Airports(aid),
  foreign key(cond) references conditions(cid)
);
```

inster csv to Tables.

```
historydata1<-read.csv("data1.csv",header=TRUE,sep=",")
dbWriteTable(mydb,name = "Incidents",data12,overwrite=TRUE,row.names=FALSE)
```

```
## [1] TRUE
```

```
historydata2<-read.csv("data3.csv",header=TRUE,sep=",")
dbWriteTable(mydb,"conditions",historydata2,overwrite =TRUE,row.names=FALSE)
```

```
## [1] TRUE
```

```
historydata3<-read.csv("data5.csv",header=TRUE,sep=",")
dbWriteTable(mydb,"Airports",historydata3,overwrite =TRUE,row.names=FALSE)
```

```
## [1] TRUE
```

```
drop view if exists IncidentsV
```

```
drop view if exists condV
```

```
drop view if exists AirportV
```

```
#3. take look for tables.
```

```
CREATE VIEW IncidentsV AS
SELECT *
FROM
Incidents
```

```
select * from Incidents
```

Table 1: Displaying records 1 - 10

iid	time	origin	airline	aircraft	flightPhase	impact	cond	aid
202152	11/23/2000	New York	US AIRWAYS*	B-737-400	inflight	1	1	1
208159	7/25/2001	Texas	AMERICAN AIRLINES	MD-80	landing	1	2	2
207601	9/14/2001	Louisiana	BUSINESS	C-500	inflight	0	1	3
215953	9/5/2002	Washington	ALASKA AIRLINES	B-737-400	inflight	0	2	4
219878	6/23/2003	Virginia	COMAIR AIRLINES	CL-RJ100/200	inflight	0	1	5
218432	7/24/2003	N/A	AMERICAN AIRLINES	A-300	takeoff	0	1	6
221697	8/17/2003	Delaware	BUSINESS	LEARJET-25	inflight	1	1	7
236635	3/1/2006	DC	UNITED AIRLINES	A-320	inflight	1	2	8
207369	1/6/2000	Georgia	AIRTRAN AIRWAYS	DC-9-30	takeoff	0	2	9
204371	1/7/2000	Florida	AIRTOURS INTL	A-330	landing	0	2	10

```
CREATE VIEW condV AS
SELECT *
FROM
conditions
```

```
select * from condV
```

Table 2: 3 records

condition	cid	explanation
No Cloud	1	none

condition	cid	explanation
Some Cloud	2	none
Overcast	3	none

```
CREATE VIEW AirportV AS
SELECT *
FROM
Airports
```

```
select * from AirportV
```

Table 3: Displaying records 1 - 10

airportName	state	aid	airportCode
LAGUARDIA NY	New York	1	none
DALLAS/FORT WORTH INTL ARPT	Texas	2	none
LAKEFRONT AIRPORT	Louisiana	3	none
SEATTLE-TACOMA INTL	Washington	4	none
NORFOLK INTL	Virginia	5	none
GUAYAQUIL/S BOLIVAR	N/A	6	none
NEW CASTLE COUNTY	Delaware	7	none
WASHINGTON DULLES INTL ARPT	DC	8	none
ATLANTA INTL	Georgia	9	none
ORLANDO SANFORD INTL AIRPORT	Florida	10	none

remove MILITARY from Incidents table.

```
DELETE FROM Incidents WHERE airline='MILITARY';
```

```
select count(airline) from Incidents where airline='MILITARY'
```

Table 4: 1 records

count(airline)
0

4. query for number of strike by different floghtPhase

```
select flightPhase, count(iid) as num from Incidents group by flightPhase
```

Table 5: 4 records

flightPhase	num
inflight	15523
landing	5047
takeoff	4687
unknown	212

5.above Average

```
select flightPhase, count(iid) as aboveAverage from Incidents group by flightPhase having aboveAverage > 6
```

Table 6: 1 records

flightPhase	aboveAverage
inflight	15523

```
select * from Incidents
```

Table 7: Displaying records 1 - 10

iid	time	origin	airline	aircraft	flightPhase	impact	cond	aid
202152	11/23/2000	New York	US AIRWAYS*	B-737-400	inflight	1	1	1
208159	7/25/2001	Texas	AMERICAN AIRLINES	MD-80	landing	1	2	2
207601	9/14/2001	Louisiana	BUSINESS	C-500	inflight	0	1	3
215953	9/5/2002	Washington	ALASKA AIRLINES	B-737-400	inflight	0	2	4
219878	6/23/2003	Virginia	COMAIR AIRLINES	CL-RJ100/200	inflight	0	1	5
218432	7/24/2003	N/A	AMERICAN AIRLINES	A-300	takeoff	0	1	6
221697	8/17/2003	Delaware	BUSINESS	LEARJET-25	inflight	1	1	7
236635	3/1/2006	DC	UNITED AIRLINES	A-320	inflight	1	2	8
207369	1/6/2000	Georgia	AIRTRAN AIRWAYS	DC-9-30	takeoff	0	2	9
204371	1/7/2000	Florida	AIRTOURS INTL	A-330	landing	0	2	10

change “time” to date type.

```
ALTER TABLE Incidents ADD (times DATE);
```

```
UPDATE Incidents
```

```
SET times = str_to_date( time, '%m/%d/%Y' ) where time != '';
```

```
ALTER TABLE Incidents
```

```
DROP COLUMN time;
```

```
select * from Incidents
```

Table 8: Displaying records 1 - 10

iid	origin	airline	aircraft	flightPhase	impact	cond	aid	times
202152	New York	US AIRWAYS*	B-737-400	inflight	1	1	1	2000-11-23
208159	Texas	AMERICAN AIRLINES	MD-80	landing	1	2	2	2001-07-25
207601	Louisiana	BUSINESS	C-500	inflight	0	1	3	2001-09-14
215953	Washington	ALASKA AIRLINES	B-737-400	inflight	0	2	4	2002-09-05
219878	Virginia	COMAIR AIRLINES	CL-RJ100/200	inflight	0	1	5	2003-06-23
218432	N/A	AMERICAN AIRLINES	A-300	takeoff	0	1	6	2003-07-24
221697	Delaware	BUSINESS	LEARJET-25	inflight	1	1	7	2003-08-17
236635	DC	UNITED AIRLINES	A-320	inflight	1	2	8	2006-03-01
207369	Georgia	AIRTRAN AIRWAYS	DC-9-30	takeoff	0	2	9	2000-01-06
204371	Florida	AIRTOURS INTL	A-330	landing	0	2	10	2000-01-07

6.avg for month

```
select MONTH(times) as months,round(count(iid)/(select count(DISTINCT year(times)) from Incidents )) as
```

Table 9: Displaying records 1 - 10

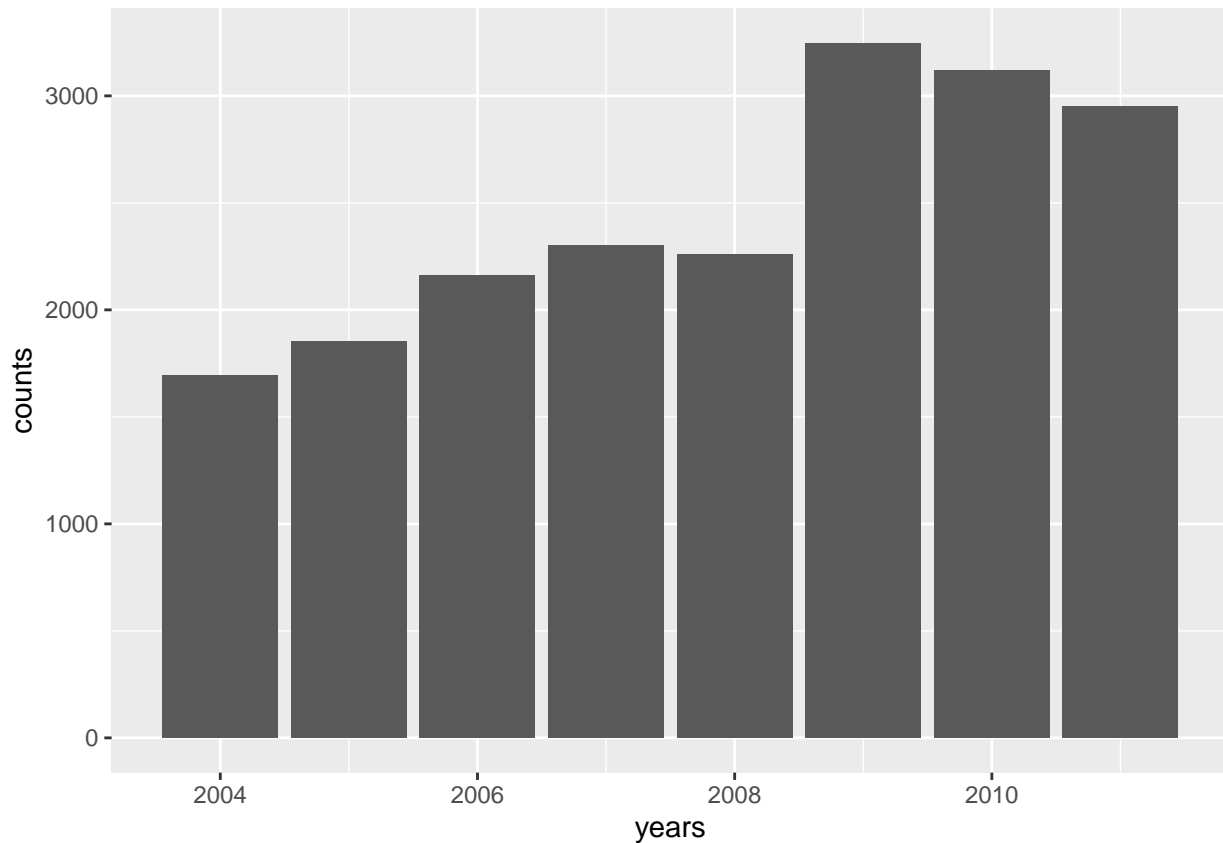
months	Average
1	78
2	64
3	102
4	152
5	192
6	173
7	272
8	309
9	284
10	252

7.bar plot

```
df <- dbGetQuery(mydb, "select YEAR(times) as years, count(iid) as counts from Incidents where YEAR(ti
print(df)
```

```
##  years counts
## 1  2006  2159
## 2  2004  1692
## 3  2005  1853
## 4  2007  2301
## 5  2008  2258
## 6  2009  3247
## 7  2010  3121
## 8  2011  2952
```

```
library(ggplot2)
ggplot(data=df, aes(x=years, y=counts)) +
  geom_bar(stat="identity")
```



8.create a table keep who add new data

```
drop table if exists users
```

```
DROP TRIGGER IF EXISTS useradd;
```

```
create table users(
  iid int not null,
  userName text not null,
  primary key(iid)
)
```

after insert on Incidents record who did this change.

```
create trigger useradd after insert on Incidents
for each row
BEGIN
insert into users(iid,userName) values (new.iid,(select USER()));
END;
```

```
insert into Incidents(iid,origin,airline,aircraft,flightPhase,impact,cond,aid,times) VALUES (99999,"New
```

#output.

```
select * from users
```


Table 10: 1 records

iid	userName
99999	root@localhost

```
dbDisconnect(mydb)
```

```
## [1] TRUE
```