EXERCISE- VII
CONDITIONAL CONTROL STRUCTURES

1. **Program to check the leap year or not.**

Ans:

```
year=as.integer(readline(prompt="Enter year"))
if(year%%4==0 || year%%400==0 && year%%100!=0){
print(paste(year,"is leap"))
}else{
print(paste(year,"is not leap"))
}
Output:Enter year2021
[1] "2021 is not leap"
```

2. **Find the Factorial of a given Number.**

Ans:
```
x=as.integer(readline(prompt="Enter the limit."))
f=1
if(x==0){
print(paste("factorial of0 =1"))
}else{
for(i in 1:x){
   f=f*i
 }
print(paste("Factorial=",f))
}
Output: Enter the limit.5
[1] "Factorial= 120"
```

3. **Check whether the given number is Even or Odd.**

Ans:
```
num=as.integer(readline(prompt="Enter a no"))
if((num%%2==0)){
print(paste(num,"is even"))
}else{
print(paste(num,"is odd"))
}
Output:Enter a no5
[1] "5 is
```

EXERCISE- IX
ITERATIVE CONTROL STRUCTURES
FOR LOOP

1. Program to count the number of even numbers in a vector.

Ans: x=c(2,3,4,5,6)
for(i in 1:5)
if(x[i]%%2==0){
print(paste(x[i]))
 }
Output:[1] "2"
[1] "4"
[1] "6

2. Program to Check Whether the given number is prime or not.

Ans:num=as.integer(readline(prompt="Enter the number"))
c=0
x=num
for(i in 1:num){
if(num%%i==0){
   c=c+1
 }
}
if(c==2){
print(paste("is prime"))
}else{
print(paste("is not prime"))
}
Output: Enter the number2
[1] "is prime"

3. Program to display multiplication table.

Ans:
num=as.integer(readline(prompt="Enter the num"))
for(i in 1:10){
print(paste(num,"x",i,"=",num*i))
}
Output: Enter the num2
[1] "2 x 1 = 2"
[1] "2 x 2 = 4"
[1] "2 x 3 = 6"

```
[1] "2 x 4 = 8"
[1] "2 x 5 = 10"
[1] "2 x 6 = 12"
[1] "2 x 7 = 14"
[1] "2 x 8 = 16"
[1] "2 x 9 = 18"
[1] "2 x 10 = 20"
```

EXERCISE- X
ITERATIVE CONTROL STRUCTURES
WHILE LOOP

1. **Check whether the given number is Arm strong number or not.**

```
Ans: num=as.integer(readline(prompt="enter number"))
r=0
rev=0
x=num
while(num>0){
  r=num%%10
  rev=rev+(r*r*r)
  num=floor(num/10)
}
if(rev==x){
  print(paste(x,"and",rev))
  print(paste("the number is armstrong"))
}else{
  print(paste("not armstrong"))
}
Output: enter number101

[1] "not armstrong"
```

2. **Find sum of natural numbers without formula.**

```
Ans: num=as.integer(readline(prompt="enter a number"))
i=1
s=0
while(i<=num){
  s=s+1
  i=i+1
}
print(paste("sum=",s))
Output:
enter a number5
[1] "sum= 5"
```

3. Program to print the Fibonacci Series

```
Ans:  a1=0
a2=1
a3=0
i=1
num=as.integer(readline(prompt="enter the limit"))
print(paste("0"))
print(paste("1"))
while(i<=num-1){
  a3=a2+a1
  a1=a2
  a2=a3
print(paste(a3," "))
i=i+1
}
```

Output:
```
enter the limit0
[1] "0"
[1] "1"
```

EXERCISE- XI
R BAR PLOT

1. Let us suppose, we have a vector of maximum temperatures (in degree Celsius) for seven days as follows.

Max.temp: 22, 27, 26, 24, 23, 26, 28

make a vertical bar plot out of this data.

make a horizontal bar plot out of this data with some parameters

Ans:

```
temp=c(22,27,26,24,23,26,28)
barplot(temp,xlab="day",ylab="tempreture",main="temp per day")
```
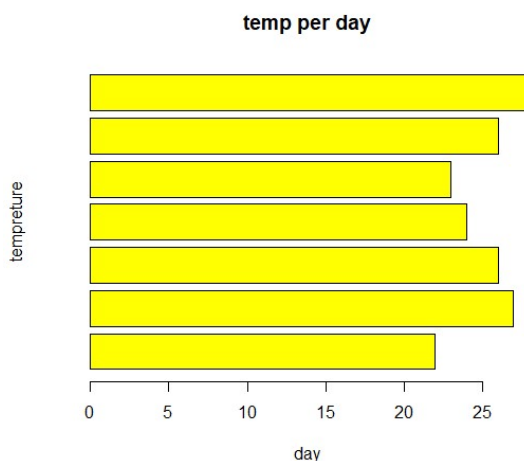
Output:
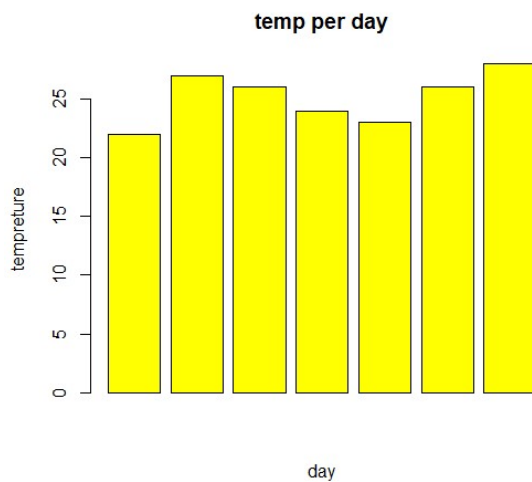

```
temp=c(22,27,26,24,23,26,28)
barplot(temp,xlab="tempreture",ylab="day",main="temp perday",horiz=TRUE)
```
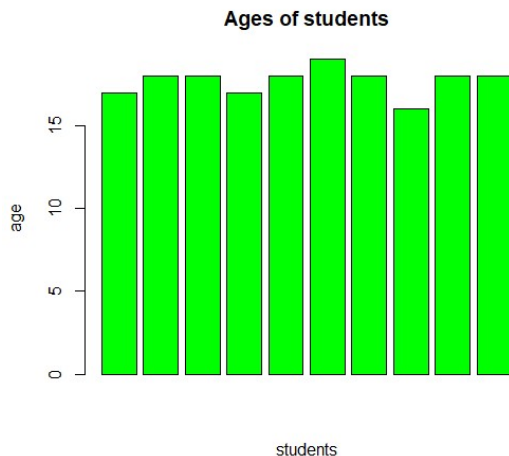
Output:

2.Plotting Categorical Data
A vector of age of 10 college students given below
age <- c(17,18,18,17,18,19,18,16,18,18).create bar plot with some parameters
Ans: age<-c(17,18,18,17,18,19,18,16,18,18)
barplot(age,xlab="students",ylab="age",main="Ages of students")
Output:

Ages of students

EXERCISE- XII
R PIE CHART

2. **Let us consider the below data represents the monthly expenditure breakdown of an individual.**
>expenditure

Housing	Food	Cloths	Entertainment	Other
600	300	150	100	200

draw a simple pie chart out of this data
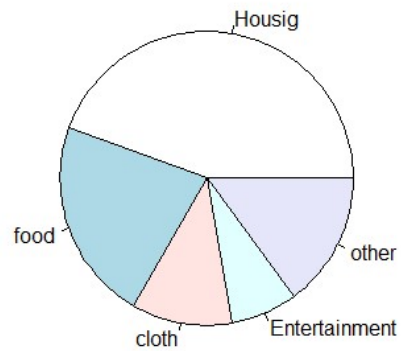**Draw Pie chart with additional parameters**
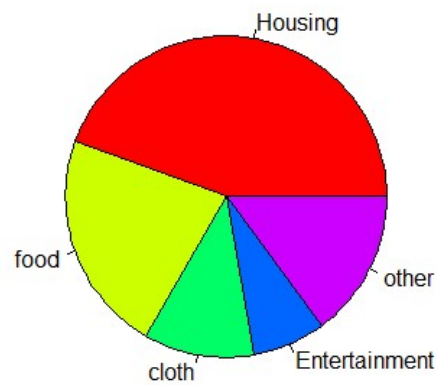

Ans:
x=c(600,300,150,100,200)
labels<-c("Housing","food","cloth","Entertainment","other")
pie(x,labels,.ain="Expenditure")
Output:

```
x=c(600,300,150,100,200)
labels<-c("Housing","food","cloth","Entertainment","other")
pie(x,labels,.ain="Expenditure",col=rainbow(length(x)))
```
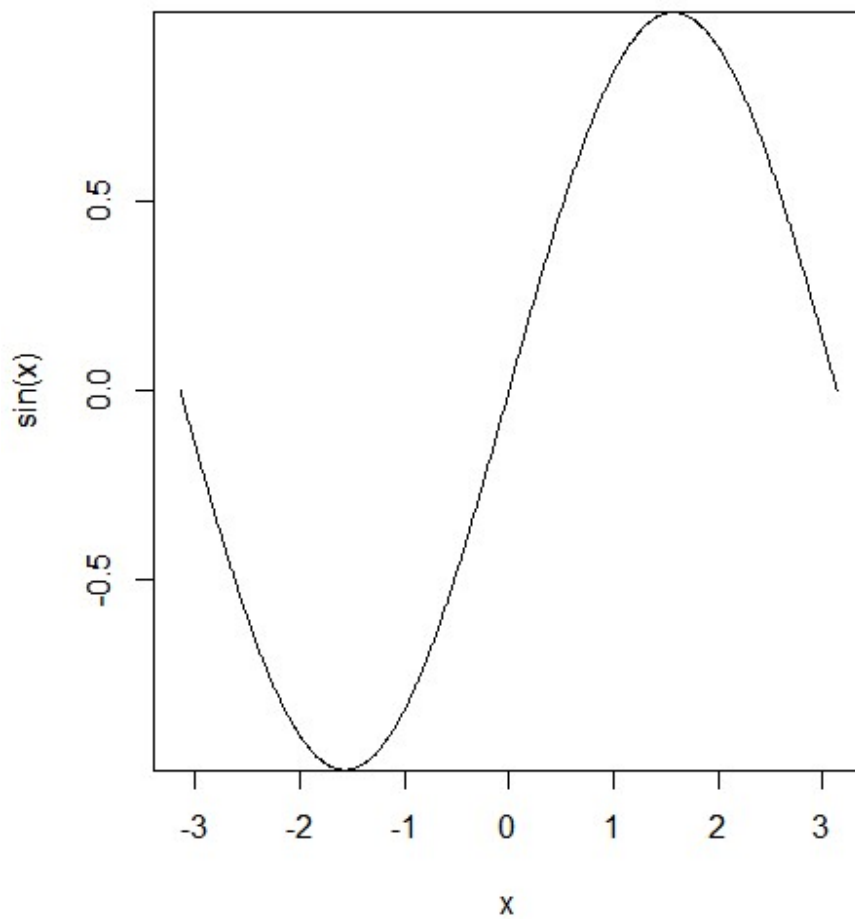Output:

EXERCISE- XIII
R PLOT FUNCTION

Plot a sine function form range -pi to pi.
Ans: x<-seq(-pi,pi,0.01)
plot(x,sin(x),type="l")
Output:

EXERCISE- XIV
R HISTOGRAM

Use the built-in dataset **airquality** which has Daily air quality measurements in New York, May to September 1973.Use the temperature parameter which has 154 observations in degree Fahrenheit.
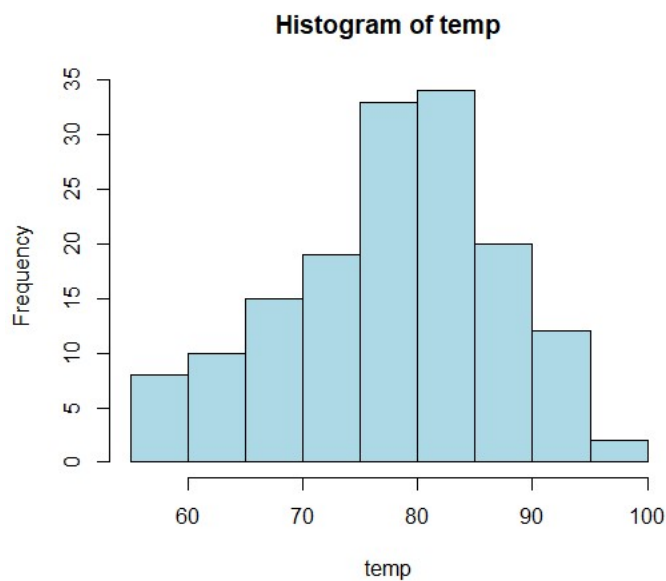
Plot the Histogram of temperature with some parameters
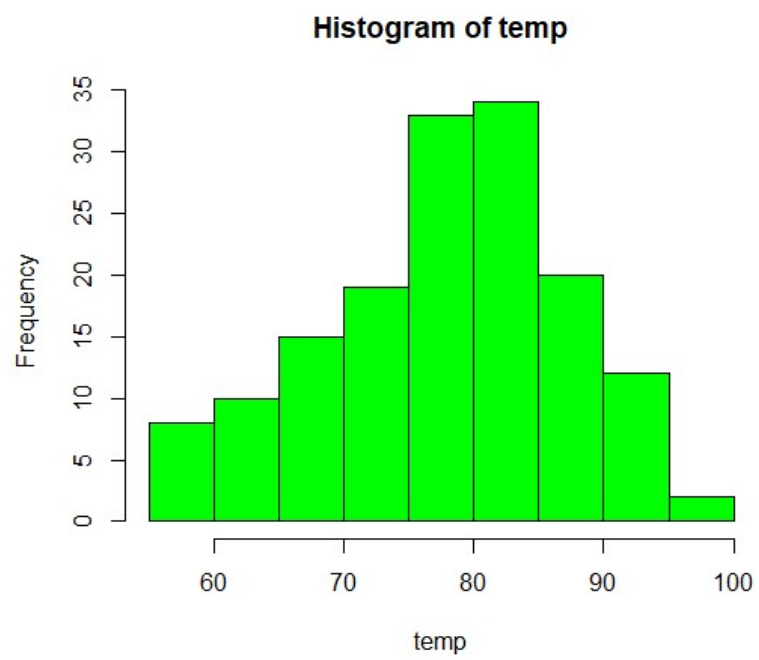
Ans:

```
temp<-airquality$Temp
hist(temp)
```

output:

Histogram of temp

```
temp<-airquality$Temp
hist(temp,col="orange")
```

Output:

Histogram of temp

EXERCISE- XV
R BOXPLOT

Use the built-in dataset air quality which has Daily air quality measurements in New York, May to September 1973.Use the temperature parameter which has 154 observations in degree Fahrenheit.
Plot boxplot for the ozone readings.
Ans:

```
        oz=airquality$Ozone
boxplot(oz)
```
Output: