Code ▾

R Notebook

Mike Kozlowski

##R Loops and Control Code

R has the standard if operation to make decisions,

if the test condition is true, then the block of code delimited by the curly brackets {} is executed

Hide

```


x=5

if(x<6)
{
  print("X was less than 6")
  cat("The value of X squared is :",x^2, sep=" ")
}
```

```
[1] "X was less than 6"
The value of X squared is : 25
```

We can add an else statement, which runs if the if statement is not true

Hide

```
x=7

if(x<6)
{
  print("X was less than 6")
  cat("The value of X squared is :",x^2, sep=" ")
}else
{
  print("X was greater than 6")
  cat("The value of X cubed is :",x^2, sep=" ")
}
```

```
[1] "X was greater than 6"
The value of X cubed is : 49
```

Note that R is fussy about the positioning of else, it must be adjacent to the bracking } closing the if

There is an else if option as well

Hide

```
x=12

if(x<6)
{
  print("X was less than 6")
  cat("The value of X squared is :",x^2, sep=" ")
}else if (x<10){
  print("X was greater than 6 but less than 10")
  cat("The value of X cubed is :",x^3, sep=" ")
}else
{
  print("X was greater than 10")
  cat("The value of square root X is :",x^0.5, sep=" ")
}
```

```
[1] "X was greater than 10"
The value of square root X is : 3.464102
```

##For loops

-are always iterations through a list of values

cat()- a print and concatenate function

note the use of the command code “”, which is a newline character

Hide

```
x=c(1,2,5,11,13)
for (i in x)
{
  cat("I is:",i, "I squared is:",i^2,"\n", sep=" ")
}
```

```
I is: 1 I squared is: 1
I is: 2 I squared is: 4
I is: 5 I squared is: 25
I is: 11 I squared is: 121
I is: 13 I squared is: 169
```

We can compute values such as N-factorial with a loop, this is a classic programming task

Hide

```
N=5
Nfact=1
for (x in 1:N)
{
  Nfact=Nfact*x
}
print(Nfact)
```

```
[1] 120
```

But in R, we can often carry out tasks such as this one using built-in functions

Hide

```
N=5
Nfact=prod(seq(1,N))
Nfact
```

There is also a while loop available, it continues while the condition is true

What power of 2 is greater than 3716?

Hide

```
N=0
v=2^N
target=3716
while(v<target)
{
  N=N+1
  v=2^N
}
Nlast=N-1
vlast=2^Nlast
cat("last valid N was ",Nlast," 2^N is ",vlast,"\n",sep=" ")
```

```
last valid N was  11  2^N is  2048
```

One interesting use of loops is with strings,

Here I will get the directory listing of the current direction, and print it out

Hide

```
# show the current working directory, using get working directory
cat(getwd(),"\n")
```

```
C:/Users/Mike/Documents/DAT511/2-8 class
```

Hide

```
# get the directory output and store it in temp
temp=dir()
# print each file name in the directory
for (fname in temp)
{
  cat(fname,"\n")
}
```

```
Data_Representation_chap3.Rmd
dplyr_examples.Rmd
Intro_R_Sets_Chap_2.Rmd
R Loops and Ifs.Rmd
```