Control Structure Code Samples:

If else statement:

```
#See the code syntax below for if else statement
if(x>1){
 print("x is greater than 1")
 }else{
  print("x is less than 1")
  }

#See the code below for nested if else statement

 x=10
  x=10
 if(x>1 & x<7){
     print("x is between 1 and 7")}else if(x>8 & x< 15){
         print("x is between 8 and 15")
     }

[1] "x is between 8 and 15"
```

For loops:
As we know for loops are used for iterating items

```
 #Below code shows for  loop implementation
x = c(1,2,3,4,5)
 for(i in 1:5){
     print(x[i])
 }
[1] 1
[1] 2
[1] 3
[1] 4
[1] 5
```

While loop :

```
 #Below code shows while loop in R
x = 2.987
while(x <= 4.987) {
     x = x + 0.987
     print(c(x,x-2,x-1))
 }
[1] 3.974 1.974 2.974
```

```
[1] 4.961 2.961 3.961
[1] 5.948 3.948 4.948
```

Repeat Loop:
The repeat loop is an infinite loop and used in association with a break statement.

```
 #Below code shows repeat loop:
a = 1
 repeat { print(a) a = a+1 if(a > 4) break }
[1] 1
[1] 2
[1] 3
[1] 4
```

Break statement:
A break statement is used in a loop to stop the iterations and flow the control outside of the loop.

```
 #Below code shows break statement:
x = 1:10
 for (i in x){
    if (i == 2){
       break
    }
    print(i)
 }
[1] 1
```

Next statement:
Next statement enables to skip the current iteration of a loop without terminating it.

```
 #Below code shows next statement
x = 1: 4
 for (i in x) {
    if (i == 2){
       next}
    print(i)
 }
[1] 1
[1] 3
[1] 4
```

Creating a function in R:
function() is a built-in R function whose job is to create functions. In the below example function() takes one parameter x, executes a for loop logic.
The function object thus created using function() is assigned to a variable

('words.names'). Now this created function will be called using the variable 'word.names'

#Below code shows us, how a function is created in R:

Syntax:
function_name = function(parameters,..){ code}

```
words = c("R", "datascience", "machinelearning","algorithms","AI")
words.names = function(x) {
    for(name in x){
        print(name)
    }
}
#Calling the function
 words.names(words)
[1] "R"
[1] "datascience"
[1] "machinelearning"
[1] "algorithms"
[1] "AI"
```

Hands on exercise of what we have learnt so far

We create a data frame DF, run for loop, ifelse in a function and call the function

```
#create 3 vectors name,age,salary
name = c("David","John","Mathew")
age = c(30,40,50)
salary = c(30000,120000,55000)
#create a data frame DF by combining the 3 vectors using cbind() function
DF = data.frame(cbind(name,Age,salary))
#display DF
DF
   name Age salary
1  David  30  30000
2   John  40 120000
3 Mathew  50  55000
#dimensions of DF
 dim(DF)
[1] 3 3

#write a function which displays the salaried person name
findHighSalary = function(df){
    Maxsal = 0
    empname = ""
```

```
    for(i in 1:nrow(DF)){
        tmpsal = as.numeric(DF[i,3] )
        if(tmpsal > Maxsal){
            Maxsal = tmpsal
            empname = DF[i,1]
        }
    }
    return(as.character(empname))
 }
#calling the function
findHighSalary(DF)
[1] "Mathew"
```