PairProgramming\_If\_else

HDS

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## if-else

### Pair programming exercise for DSE5002, on if and else operations

when the test condition in an if statement is met, then the following code block is run. Otherwise, not

if(condiction) { …put some commands here }

Suppose if x is less than 10, then we want to set y=0.125\*x and z to x squared

This looks like

y=0  
z=0  
x=5  
  
if(x<10)  
{  
 y=0.125\*x  
 z=x^2  
}  
#cat is a print function I am using here, the \n is a linefeed character  
# to advance to the next line in the printing  
  
cat("Y is ",y ,"\n")

## Y is 0.625

cat("Z is ",z)

## Z is 25

## *Action Required: alter my code so that Y and Z are not altered*

y=0  
z=0  
x=5  
  
if(x>10)  
{  
 y=0.125\*x  
 z=x^2  
}  
  
cat("Y is ",y ,"\n")

## Y is 0

cat("Z is ",z)

## Z is 0

#If-else

Suppose that when x<10, we want this calculation to run as above, but for other x values, we want y=0.25\*x, and z=square root of x

We use an else statement

y=0  
z=0  
x=5  
  
if(x<10)  
{  
 y=0.125\*x  
 z=x^2  
}else  
{  
 y=0.25\*x  
 z=x^(0.5)  
}  
#cat is a print function I am using here, the \n is a linefeed character  
# to advance to the next line in the printing  
  
cat("Y is ",y ,"\n")

## Y is 0.625

cat("Z is ",z)

## Z is 25

## *Action Required:*

Verify that this code works for a couple of different values of x

y=0  
z=0  
x=25  
  
if(x<10)  
{  
 y=0.125\*x  
 z=x^2  
}else  
{  
 y=0.25\*x  
 z=x^(0.5)  
}  
  
cat("Y is ",y ,"\n")

## Y is 6.25

cat("Z is ",z)

## Z is 5

Note

Each if statement can only have one else

We can put if statements inside elses to allow for more possible options

x=-1  
if(x<0)  
{  
 cat("Negative X value\n")  
}else  
{if(x%%2==1)  
 {  
 cat("X is even\n")  
 }  
 else  
 {  
 cat("X is odd\n")  
 }  
}

## Negative X value

Alter this code and verify that it works

x=-1  
if(x>0)  
{  
 cat("Negative X value\n")  
}else  
{if(x%%2==1)  
 {  
 cat("X is even\n")  
 }  
 else  
 {  
 cat("X is odd\n")  
 }  
 }

## X is even

# Compound test conditions

### Using AND (&) and OR(|)

to decide what to do handle this decision

“I walk back the Starbucks some mornings, and while I like their coffee, the service is slow and I don’t like to wait. So I’ll stop for coffee there are 2 or less people in line. But if they have scones in stock, I’ll stop if there are 4 or less people in line”

Set up variables

people\_in\_line- which is an integer scones\_in\_stock-which is a binary or logical variable

What test condition would you need to figure out if I will stop at starbucks?

Set up an if statement that prints out the decision

people\_in\_line=3  
scones\_in\_stock=TRUE  
  
# write your code here  
  
if (people\_in\_line <= 2 || people\_in\_line <= 4 && scones\_in\_stock ==TRUE){   
 cat("I will stop at starbucks")  
} else   
 {  
 cat("I will not stop at starbucks")  
 }

## I will stop at starbucks

## If-else assignment statements

R has the ability to carry out assignments in an if-else operator

we send in a condition and two possible assignments, the first for TRUE, the second for FALSE

it might look like this

x=5  
y=ifelse(x<10,0.125\*x,0.25\*x)  
y

## [1] 0.625

## *Action: Verify that this behaves as expected when x is changed*

x=10  
y=ifelse(x<10,0.125\*x,0.25\*x)  
y

## [1] 2.5

This is not a structure I use much, it does save some time. I tend to use the less sophisticated approach shown above.