

R Code

```
1
2 ##### Relational operators #####
3
4 # Example 1
5 a <- 10
6 b <- 20
7
8 print(a > b)
9 print(a < b)
10 print(a == b)
11 print(a != b)
12
13 #example 2
14
15 10 > 5
16
17 3 < 2
18
19 6 >= 6
20
21 4 <= 7
22
23 # example 3
24
25 x <- c(2, 5, 8, 10)
26
27 x > 6
28
29 # example 4
30 x <- c(3, 7, 12, 15)
31
32 x <= 10
33
34
35 ##### Logical Operators #####
36
37 # And (&)
38 #1
39 x <- 8
40
41 x > 5 & x < 10
42
43 #2
44 x <- 15
45 x < 10 & x > 20
46
47 #3
48 x <- 10
49 y <- 20
50
```

```
51 (x == 10) & (y == 20)
52
53 #4
54 x <- 1:6
55 (x > 2) & (x < 5)
56
57
58 # OR (|)
59
60 #1
61 x <- 8
62
63 x > 10 | x == 8
64
65 #2
66 x <- 1:6
67 (x > 2) | (x < 5)
68
69
70 # NOT (!)
71
72 x <- 8
73
74 !(x == 8)
75
76 x <- 10
77 !(x > 5)
78
79 x <- c(5, 12, 18, 3, 25)
80
81 !(x > 10)
82
83
84 # Missing data handling in R
85 # In R missing values are represented by "NA"
86
87
88 #Identify missing values
89
90 x <- c(10, 20, NA, 40, NA, 60)
91 is.na(x)
92
93 # Count missing values
94 x <- c(10, 20, NA, 40, NA, 60)
95 sum(is.na(x))
96
97 #Remove missing values
98 x <- c(10, 20, NA, 40, NA, 60)
99 na.omit(x)
100
101 #Replace missing values with mean
102 x <- c(10, 20, NA, 40, NA, 60)
103
104 x[is.na(x)] <- mean(x, na.rm = TRUE)
```

```
105 x
106
107
108 #####Conditional Execution #####
109
110 # if condition
111
112 # Example 1
113 #1
114 x <- 5
115
116 if(x > 0){
117   print("Positive number")
118 }
119
120 # if-else conditional execution
121 #1
122 x <- -8
123
124 if(x > 0){
125   print("Positive")
126 } else {
127   print("Negative or Zero")
128 }
129
130 #2
131 x <- 5
132 if(x == 3) {
133   x <- x - 1
134 } else {
135   x <- 2 * x
136 }
137 x
138
139 #3
140 n<-11
141 if(n %% 2 == 0){
142   print("Even number")
143 } else {
144   print("Odd number")
145 }
146
147
148 # Conditional execution using ifelse()
149
150 #1
151 x <- 1:10
152 print(x)
153
154 result <- ifelse(x < 6, x^2, x + 1)
155 print(result)
156
157
158 #2
```

```
159 x <- c(-5, 10, 0, -2, 8)
160
161 ifelse(x > 0, "Positive", "Non-Positive")
162
163 #3
164
165 x <- 1:10
166
167 ifelse(x %% 2 == 0, "Even", "Odd")
168
169 #4
170 amount <- c(500, 1200, 800, 2500)
171
172 discount <- ifelse(amount >= 1000, 0.10 * amount, 0)
173 discount
174
175 #5
176
177 x <- c(10, NA, 30, NA, 50)
178
179 ifelse(is.na(x), 0, x)
180
181
182 #####Practice Questions#####
183
184 #####Practice Set 1#####
185
186 #Missing Data + Relational + Logical Operators
187
188 #Q1
189 x <- c(12, NA, 25, 18, NA, 30, 10, NA)
190 Tasks:
191
192 #Display x
193 #Find which elements are NA
194 #Count total missing values
195 #Remove missing values
196 #Replace missing values with mean of available values
197 #Replace missing values with 0
198 #Print the updated vector after replacement
199
200 #Q2
201
202 v <- c(5, 12, 18, 3, 25, 8, 15)
203 #Find values greater than 10
204 #Find values less than 10
205 #Find values between 10 and 20 (inclusive)
206 #Find positions where values are greater than 10
207 #Find positions where values are even
208
209 #Q3
210 x <- 10
211 y <- 20
212 #Evaluate: (x == 10) & (y == 20)
```

```
213 #Evaluate: (x == 5) & (y == 20)
214 #Evaluate: (x == 10) | (y == 5)
215 #Evaluate: (x > 5) & (y < 10)
216 #Evaluate: !(x == 10)
217 #Evaluate: !(y == 10)
218
219 #Q4
220 z <- c(2, 6, 9, 12, 15, 18, 21, 25)
221 #Find values greater than 10 AND divisible by 3
222 #Find values less than 10 OR divisible by 5
223 #Find values NOT divisible by 2
224 #Count how many values are greater than 15
225
226
227
228
229
230
231
232
233
234
235
236
237
```