```
 1 import math
 2
 3 mylist = ["banana","orange",23,0.12]
 4 print(type(mylist))
 5 mytuple = (34,"Brian", 21)
 6 print(type(mytuple))
 7
 8 # Sets works only with unique values{}.
 9 list = [11,22,33,11,22,33,44,55,66,33,]
10 myset = set(list)
11 print(myset)
12
13
14 # Dictionary
15 mydict = {"name":"Dedan","age":19,"passion":"football
   ","occupation":"Technology"}
16 print(mydict )
17
18 print(type(mydict))
19
20
21 # Data types
22    #Float,str,bool,list,tuple,set,int,dict.
23
24 # Arithmetic Operators
25 print(40%15)     #Gives the remainder after division
26 print(40/15)
27 print(5**2)       #Gives the square
28 print(40//15)     #Eliminates the remainder in values
29
30
31 # Logical Operators
32 t = 10
33 y = 20
34 i = 30
35 if t > y and y > i:
36     print("t is the largest")
37 else:
38     print("t is the smallest")
39
40
```

```
41 e = 20
42 r = 40
43 o = 10
44 if e > r or e == o:
45     print("atleast one case is true")
46 else:
47     print("nothing works here")
48
49
50 s = 20
51 w = 40
52 q = 30
53 if not (s == w or s > q):
54     print("True assumption")
55 else:
56     print("wrong assumption")
57
58
59 # Number system
60 # binary number are found by dividing the number
   given by 2 and recording the remainder values
61 # octo numbers has a base of 8 therefore finding
   there values you divide by figure given by 8
62 # Decimal numbers have a base of 10 therefore divide
   by 10 to find numbering values
63
64     #24/2 =12 # rem 0
65     #12/2 =6 #rem 0
66     #   6/2 =3 # rem 0
67     #3/2 =1 # rem 1
68 # Therefore the value is read from the bottom to top
   which is [1000]
69
70     #34/8 = 4.25 #rem 2
71     #4/8 = 0.5 #rem 4
72 # And the octal form of 34 becomes 42.
73
74     #99/2=49.5 #rem 1
75     #49/2=24.5 # rem 1
76     #24/2=12 # rem 0
77     #12/2=6 # rem 0
```

```
 78     #6/2=3 # rem 0
 79     #3/2=1 # rem 1
 80 # The binary form of 99 is 100011.
 81
 82 # Bitwise operators
 83 a=10
 84 b=5
 85 print(bin(a & b))   # bitwise AND (&)
 86
 87 a=10
 88 b=5
 89 print(bin(a | b))    # bitwise (OR)
 90
 91
 92 print(bin(10))          # bitwise NOT (~)
 93 a=10
 94 b=5
 95 print(~a)
 96
 97  # Math in python
 98 Mufasa = 2
 99     #Mufasa = Mufasa+1
100 Mufasa += 1         # This makes the first
    expression shorter
101 print(Mufasa)
102
103 w = round(21.34)
104 t = -45
105 print(w)
106 print(abs(t))
107
108 x = pow(4,3)
109 print(x)
110 print(max(w , t , x))            # Gives the maximum
     value
111 print(min(w , t , x))           # Gives the minimum
    value
112
113 # Import math                         # Make sure to
    select the suggested'math' word.
114 print(math.pi)
```

```
115
116 print(math.ceil(w))
117 print(math.sqrt(x))
118 print(math.floor(w))
119
120 # Exercise problems
121 # radius = float(input('enter the radius of your
    circle'))
122 # circumference = 2 * math.pi * radius            #
    2(pi)(radius)
123 # print(f"The circumference is:{circumference}")
124
125
126 # User input
127
128 # name = input("what is your name?")
129 # age = input("how old are you")
130 # address =input("where do you reside")
131 # Comment  = "you're good to go"
132 # print("hello" + Comment)
133
134
135 # If, Elif, Else
136
137 d = 5
138 if d == 5:
139     print("x is 5")
140 elif d > 5:
141     print("x is above 5")
142 else:
143     print("x < 5")
144
145 d = -2
146 if d == 5:
147     print("x is 5")
148 elif d > 5:
149     print("x is above 5")
150 else:
151     print("x < 5")
152
153
```

```
154 d = 10
155 if d == 5:
156     print("x is 5")
157 elif d > 5:
158     print("x is above 5")
159 else:
160     print("x < 5")
161
162 # Confirming whether n is divisible by 2 or 3
163 n = 10
164 if n % 2 == 0:
165     print("number divisible by 2")
166 elif n % 3 ==0:
167     print("number is divisible by 3")
168 else:
169     print("number neither divisible by 2 or 3")
170
171 print("DONE")
172
173 n = 15
174 if n % 2 == 0:
175     print("number divisible by 2")
176 elif n % 3 == 0:
177     print("number is divisible by 3")
178 else:
179     print("number neither divisible by 2 or 3")
180
181 print("DONE")
182
183 n = 113
184 if n % 2 == 0:
185     print("number divisible by 2")
186 elif n % 3 == 0:
187     print("number is divisible by 3")
188 else:
189     print("number neither divisible by 2 or 3")
190
191 print("DONE")
192
193
194 # LOOPS
```

```
195 #While loops
196 h = 1                # This shows how to print 1-8 (a
     range of values).
197 while h <=8:
198     print(h)
199     h += 1
200
201  # name = input("Type your name here")
202  # while name == "":
203    # print("you din't enter your name")
204     # name = input("Type your name here")
205 print("done!")
206
207
208 # For loops
209 intergers = [1,2,3,4,5,6,7]
210 for number in intergers:
211     print("yep")
212
213 values = ["A","E","I","O","U"]
214 for i in values:
215     print(i)
216
217 # range(10)
218 # for i in range(10):
219
220   #   print(i)
221
222
223 # Break
224 power = 7
225 while power == 50:
226     break
227 else:
228     print(power)
229     power += 1
230
231
232 # Continue
233 colors = ("Red","Blue","Green","Grey","Black")
234 for color in colors:
```

```
235     if color == "Grey":
236         continue
237     print(color)
238 
239 for color in colors:
240     if color == "Grey":
241         break
242     print(color)
243 
244 
245 # while True:
246    # name = input("Guess my name:")
247    # if name.lower() == "mufasa":
248        # print("You got it")
249       # break
250    # print("...please try again")
251 
252 
253 # for color in colors:
254    # if color == "Grey":
255        # pass
256      # print("game over")
257 
258 
259 # Printing Patterns
260 
261 print('*')
262 n = 5
263 print('*' * n)
264 
265 for j in range(n):
266     print('*')
267 
268 for j in range(n):
269     print('*',end='')
270 
271 for p in range(n):
272     for q in range(n):
273         print('*', end=" ")
274     print()
275 
```

```
276 for p in range(n):
277     for q in range(p + 1):
278         print('*', end=" ")
279     print()
280
281 for p in range(n):
282     for q in range(p - 1):
283         print('*', end=" ")
284     print()
285
286
287
288
289
290
291
```