DEBUGGING THE CODE 1

In [4]:
```python
# # Describe Problem
def my_function():
  for i in range(1, 20):
    if i == 20:
      print("You got it")
my_function()

# No output will be printed because it contains bug
```

In [161...
```python
# This block explains the debuging of the previous block

def my_function():
  for i in range(1, 21):
    print(i)
    if i == 20:
        print("You got it")
my_function()

# Here the output gets printed by modifying the range from 20 to 21 as the range
# To demonstrate the range i have printed the i
```

```
1
2
3
4
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6
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9
10
11
12
13
14
15
16
17
18
19
20
You got it
```

DEBUGGING THE CODE 2

In [105...
```python
# # Reproduce the Bug
from random import randint
dice_imgs = ["❶", "❷", "❸", "❹", "❺", "❻"]
dice_num = randint(1, 6)
print(dice_imgs[dice_num])

# Bug is present in line 4, The bug is the randint range start from 0 to n value
# Here the range is 1 to 6 , but the range should be 0 to 5 as the list are coun
# if the randint function choose the 6 an out of range error occurs as the 6 ele
```

```
--------------------------------------------------------------------------
IndexError                                 Traceback (most recent call last)
Cell In[105], line 5
      3 dice_imgs = ["❶", "❷", "❸", "❹", "❺", "❻"]
      4 dice_num = randint(1, 6)
----> 5 print(dice_imgs[dice_num])
      7 # Bug is present in line 4, The bug is the randint range start from 0 to
n values according to the list
      8 # Here the range is 1 to 6 , but the range should be 0 to 5 as the list a
re counted from 0 to n values

IndexError: list index out of range
```

In [160…
```python
# Debugged code
from random import randint
dice_imgs = ["❶", "❷", "❸", "❹", "❺", "❻"]
dice_num = randint(0, 5)
print(dice_imgs[dice_num])
```

❷

DEBUGGING THE CODE 3

In [157…
```python
# # Play Computer
year = int(input("What's your year of birth?"))
if year > 1980 and year < 1994:
  print("You are a millenial.")
elif year >= 1994:
  print("You are a Gen Z.")

# No bug in this code this code is just for playing with the code
```

You are a millenial.

In [136…
```python
# # Fix the Errors
age = input("How old are you?")
if age > 18:
print("You can drive at age {age}.")
# There is an intendation error and there is an error which shows as "'>' not su
# Fix is shown in next block
```

```
  Cell In[136], line 4
    print("You can drive at age {age}.")
    ^
IndentationError: expected an indented block after 'if' statement on line 3
```

In [159…
```python
age = int(input("How old are you?"))
if age > 18:
    print(f"You can drive at age {age}.")

# Just intendent the print statement below if condition
# the input function gets the input as string, to change the string to integers
```

You can drive at age 19.

DEBUGGING THE CODE 4

In [139…
```python
# #Print is Your Friend
pages = 0
word_per_page = 0
pages = int(input("Number of pages: "))
word_per_page == int(input("Number of words per page: "))
total_words = pages * word_per_page
```

```
    print(total_words)

    #  There is an bug in line 5 as == used to compare the exact value and = is used
```

0

In [140...
```python
# #Print is Your Friend
# Debugged code
pages = 0
word_per_page = 0
pages = int(input("Number of pages: "))
word_per_page = int(input("Number of words per page: "))
total_words = pages * word_per_page
print(total_words)
```

4

DEBUGGING THE CODE 5

In [152...
```python
# #Use a Debugger ***important link for online debugger: https://pythontutor.com
def mutate(a_list):
  b_list = []
  for item in a_list:
    new_item = item * 2
  b_list.append(new_item)
  print(b_list)

mutate([1,2,3,5,8,13])

#  There is an intendation error in line 6 which appends only the last element w
```

[26]

In [158...
```python
# #Use a Debugger *** important link for online debugger: https://pythontutor.co
def mutate(a_list):
  b_list = []
  for item in a_list:
    new_item = item * 2
    b_list.append(new_item)
  print(b_list)
mutate([1,2,3,5,8,13])

# if you intend correctly every element is sent to the B_list
```

[2, 4, 6, 10, 16, 26]

DEBUGGING TIPS 1. Describe the problem 2. Reproduce a bug 3. Play computer 4. Fix the errors 5. Print is your friend 6. Use a Debugger 7. Take a break 8. Ask a friend 9. Run often 10. Ask Stackoverflow EXERCISE - 1 DEBUGGING ODD OR EVEN

In [166...
```python
number = int(input("Which number do you want to check?"))

if number % 2 = 0:
  print("This is an even number.")
else:
  print("This is an odd number.")
# There is an error in line 3  = is used to assign something to variable
# To check the value matches the value given we use ==
```

```
  Cell In[166], line 3
    if number % 2 = 0:
        ^
SyntaxError: cannot assign to expression here. Maybe you meant '==' instead of
'='?
```

In [167…
```python
#  Debugged code

number = int(input("Which number do you want to check?"))

if number % 2 == 0:
  print("This is an even number.")
else:
  print("This is an odd number.")
```

This is an odd number.

EXERCISE 2 - DEBUGGING LEAP YEAR

In [168…
```python
year = input("Which year do you want to check?")

if year % 4 == 0:
  if year % 100 == 0:
    if year % 400 == 0:
      print("Leap year.")
    else:
      print("Not leap year.")
  else:
    print("Leap year.")
else:
  print("Not leap year.")

#  The bug is located in line 1
 # The input function get the inputs as string , to convert string to integers u
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[168], line 3
      1 year = input("Which year do you want to check?")
----> 3 if year % 4 == 0:
      4   if year % 100 == 0:
      5     if year % 400 == 0:


TypeError: not all arguments converted during string formatting
```

In [169…
```python
#  Debugged code

year = int(input("Which year do you want to check?"))

if year % 4 == 0:
  if year % 100 == 0:
    if year % 400 == 0:
      print("Leap year.")
    else:
      print("Not leap year.")
  else:
    print("Leap year.")
else:
  print("Not leap year.")
```

Leap year.

EXERCISE 3 - DEBUGGING FIZZ BUZZ

In [ ]:
```python
for number in range(1, 101):
  if number % 3 == 0 or number % 5 == 0:
    print("FizzBuzz")
  if number % 3 == 0:
```

```python
    print("Fizz")
  if number % 5 == 0:
    print("Buzz")
  else:
    print([number])


# The bug lies in Line 2 which is or operator (we need both conditions to be tr
# Second bug lies in in line 9 inside the print function
```

In [170…
```python
# Debugged code

for number in range(1, 101):
  if number % 3 == 0 or number % 5 == 0:
    print("FizzBuzz")
  if number % 3 == 0:
    print("Fizz")
  if number % 5 == 0:
    print("Buzz")
  else:
    print(number)
```

```
1
2
FizzBuzz
Fizz
3
4
FizzBuzz
Buzz
FizzBuzz
Fizz
6
7
8
FizzBuzz
Fizz
9
FizzBuzz
Buzz
11
FizzBuzz
Fizz
12
13
14
FizzBuzz
Fizz
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FizzBuzz
Fizz
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19
FizzBuzz
Buzz
FizzBuzz
Fizz
21
22
23
FizzBuzz
Fizz
24
FizzBuzz
Buzz
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FizzBuzz
Fizz
27
28
29
FizzBuzz
Fizz
Buzz
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32
FizzBuzz
Fizz
33
34
```

```
FizzBuzz
Buzz
FizzBuzz
Fizz
36
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FizzBuzz
Fizz
39
FizzBuzz
Buzz
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FizzBuzz
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42
43
44
FizzBuzz
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Buzz
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FizzBuzz
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FizzBuzz
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FizzBuzz
Buzz
FizzBuzz
Fizz
66
67
```

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68
FizzBuzz
Fizz
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FizzBuzz
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99
FizzBuzz
Buzz
```