Iteration

Explain the term Iteration

Iteration is when something iterates (Loops or repeats).

What terminology do we use in our pseudocode and programming when we are construction iteration?

Repeat or loop

Definite Iteration

What does the term 'definite iteration' mean?

Definite iteration is when the amount of times something loops is known.

Screenshot your code below of using a definite FOR loop.

Screenshot

```
for i in ["dog", "cat", "lama", "goat"]: #repeat four times
    print(i)
```

```
lation
dog
cat
lama
goat
>>>
```

Annotate your code here. You can see the for loop will repeatedly print (four times) because there are four things that are in the list that the code will print.

Screenshot your code below of using a definite WHILE loop.

Screenshot

```
3 ▾  def TimesTable(times):
4        till = 12
5        counter = 0
6 ▾      while counter < till:
7            answer = counter * times
8            print (times, "X ", counter, "= ",answer)
9            counter = counter + 1
10
11       print("Times Table Complete")
12
13   TimesTable(4)
14
```

```
4 X  0 =  0
4 X  1 =  4
4 X  2 =  8
4 X  3 =  12
4 X  4 =  16
4 X  5 =  20
4 X  6 =  24
4 X  7 =  28
4 X  8 =  32
4 X  9 =  36
4 X  10 =  40
4 X  11 =  44
Times Table Complete
```

Annotate your code here. You can see that the while loop will multiply numbers until 'till' is reached and as you can see, till is 12. We know how many times the iteration will take place.

Examples of DEFINITE LOOPS

Indefinite Iteration

Explain an Indefinite Loop

An indefinite loop is a loop that will iterate and the number of times will be unknown because the loop is iterating until a certain condition is met.

Provide some code in the box below of an indefinite loop

Screenshot

```
def password():
    password = ""
    while password != "secret":
        password = input("Please enter the password: ")

        if password == "secret":
            print("Thank you. You have entered the correct password")
        else:
            print("Sorry the value entered in incorrect - try again")

password()
```

```
Please enter the password:  BobLikesEggs
Sorry the value entered in incorrect - try again
Please enter the password:  secret
Thank you. You have entered the correct password
```

Annotate your code here. This code is indefinite because the condition (password) needs to be met. The password must be input by the user but we don't know how many times the code will have to iterate because the user may have forgotten the password. The amount of iterations is unknown.

Example of INDEFINITE LOOP

Infinite Iteration

Explain an Infinite Loop

An infinite loop is a loop that will iterate endlessly.

Provide an example of an Infinite loop.

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3800
3801
3802
3803
```

```
infNumber = 1

while True:
    infNumber = infNumber + 1
    print(infNumber)
```

Screenshot

Annotate your code here. I just used while True: which I think is really easy to use for endless loops because it's endless. I decided to loop numbers increasing