Lab 3

Questions

1. What will this code output? (First predict, then check!)
```
for i in range(2,14,3):
  print(i)
```
Access this code here

2. What will this code output? (First predict, then check!)
```
number = 0
total_sum = 0
print("Starting the loop now!")
while not number==0:
  number = float(input("Enter a number:  "))
  if number==0:
    break
  total_sum += number
print(total_sum)
```

What will the output be if the user enters (3,5,10,0,4,6)
Access this code here

3. What is wrong with the following program?
```
number = 0
while number < 100:
  if number % 2:
    continue
  print(number)
  number = number + 1
```
Access this code here

4. Rewrite the following code fragment using a `break` statement and eliminating the `done` variable. Your code should behave identically to this code fragment.
```
done = False
n = 0
m = 100
while not done and n != m:
  n = int(input())
  if n < 0:
    done = True
    print("n =", n)
```
Access this code here

5. Rewrite the following code fragment so it eliminates the `continue` statement.
```
x=5
while x > 0:
  y = int(input())
  if y == 25:
    continue
  x -= 1
  print("x =", x)
```
Access this code here

Writing Programs

1. Rewrite the program from #1 of the section above using a `while` loop instead of a `for` loop

2. One way to approximate the value of π is to find a series which is known to converge to π and calculate a numerical value. For example: the series: $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - ...$ is known to converge to exactly $\frac{\pi}{4}$. Write a program which does the following:
   (a) Have the user decide how many terms to include in the series
   (b) Add together all of those terms
   (c) Multiply the result by 4 to get an estimate of π and print this value
3. Write a program to ask the user to enter the digits of a binary number, one at a time, and then convert it to a decimal. The user keeps entering in digits until they enter one that is not either 1 or 0. To convert to a binary, multiply the first digit entered by 2^0, the second digit by 2^1, the third digit by 2^2 etc and then add all of the numbers together.
   Example: if the user enters "1", then "0", then "1", then "1": the decimal result is: $(1)(2^0) + (0)(2^1) + (1)(2^2) + (1)(2^3) = 13$