1. A New Type

What is the result of the following statement in python?

```python
print(type(True))
```

2. Boolean Expressions

What is the result of the following code segment in python?

```python
x = 3
y = 4
z = 12
print(x != y)
print(x == z)
a = z < y
print("a =", a, "type a =", type(a))
b = x > y
print("b =", b, "type b =", type(b))
print(x <= y)
print(x * y >= z)
```
3. Conditional Statements

a) Write a code segment that prints the absolute value of an input integer. The code is started for you below:

\[ x = \text{int}(\text{input}(\text{"Enter an integer: ")}) \]

b) Write a code segment that prints out whether an entered number is even or odd. The code is started for you below:

\[ x = \text{int}(\text{input}(\text{"Enter an integer: ")}) \]
c) Nested Conditionals

Observe the following code:

```python
x = 24
y = "apple"
if (x > 0):
    if (y == "apple"):
        print("There are", x,"apples")
    else:
        print("No apples for you!")
else:
    print("No apples for you!")
```

What is the output of the code segment above?

The second if else statement is nested within the first one. Is there a way to improve this code? (Hint: use Logical Operators) Write the improved code below.
d) Chained Conditionals

What is the output of the following code segment in python?

```python
x = 13
y = 21
z = 4
if (z < y and x != 13):
    z = z + x
elif(z < y and x == 13):
    z = x
elif(z <= x and x < y):
    z = z + y
else:
    z = y
print("z =", z)
```
4. Recall the program to draw the shape below. Now that you have conditionals in your tool box can you write a program that uses one turtle to draw the shape and uses conditionals to change the color of the turtle each iteration through the loop? The program is started for you below:

```python
## This program draws a "starish" shape with 8 points.
## The points alternate in color between blue and green

# setup
import turtle
wn = turtle.Screen()
t_one = turtle.Turtle()
t_one.pensize(5)
```
5. Password Program Example

Write a program that prompts the user for a user name and then for a password. There are only two valid users Charlie and Mabel. Charlie’s Password is Purple and Mabel’s Password is Kittens. If Charlie logs in successfully the program should print “Login Success! Hello, Charlie!”, with a similar result for Mabel. If a username other than Charlie or Mabel is entered or passwords do not match usernames the program should print out “**** Access Denied! ****” and exit.
6. Disemvoweling Phrases

Write a program that removes the vowels from an entered phrase. Once finished the program should output the disemvoweled phrase on one line. The next line of output should state how many vowels were removed (there are multiple ways to do this). Finally, the last line should state the length of the new phrase. You can make use of the built-in `len()` function which will return the length of the string (the number of characters in the string). The program is started for you below:

```python
## This program removes the vowels from a phrase.
## It outputs the disemvoweled phrase and the
## difference in length of the two phrases

# prompt user for a phrase
phrase = input("Enter a phrase: ")
```