**Andrew Wang**

**Homework 2**

1. **Code:**

################

# Author: Andrew Wang

# Date: 9/19/2019

# This program allows the user to input year and the program calculates if there are

# 29 days or 28 days in February

#################

#users inputs year

year = float(input('Please input a year: '))

#if statement that determines leap year

if (year % 100 == 0) & (year % 400 == 0):

print("There are 29 days in Feburary in %.0f" %year)

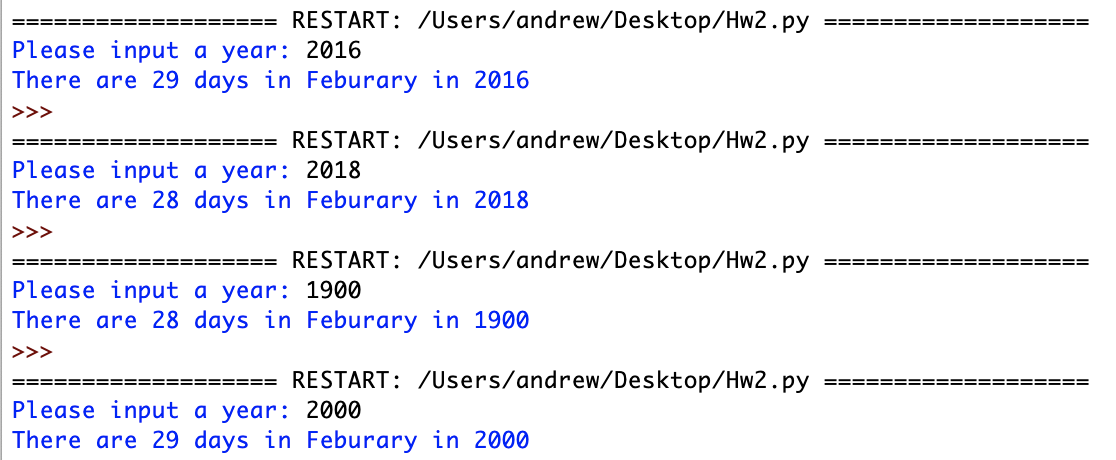
elif (year % 100 != 0) & (year % 4 == 0):

print("There are 29 days in Feburary in %.0f" %year)

else:

print("There are 28 days in Feburary in %.0f" %year)

**Output:**



1. **Code**

################

# Author: Andrew Wang

# Date: 9/19/2019

# This program allows the user to input the quantity of boxes and the program will determine

# how much discount is applied and the total price.

#################

#user inputs amount of quantity

quantity = float(input('Please input the quantity of amount package bought: '))

#price of the package

price = 99

#if statement to determine if the quantity is <0

if quantity <= 0:

print('Invalid Input!')

else:

#if statement to determine the amount of quantity and apply the necessary discount

if quantity >= 10 and quantity <= 19:

print('10% discount applied')

discount = 0.9

elif quantity >= 20 and quantity <= 49:

print('25% discount applied')

discount = 0.75

elif quantity >= 50 and quantity <= 99:

print('35% discount applied')

discount = 0.65

elif quantity >= 100:

print('45% discount applied')

discount = 0.55

else:

print('No discount applied')

discount = 1

#calculates final price with discount applied

total\_amt = price \* quantity \* discount

#prints amount of package and final price

print('The final price for purchasing '+str(int(quantity))+ ' packages is ${:,.2f}' .format(total\_amt))

**Output: A screenshot of a social media post

Description automatically generated**

1. **Code:**

################

# Author: Andrew Wang

# Date: 9/19/2019

# This program allows the user to input a pocket number between 0 and 36 and

# and the program will determine the color of the pocket number

#################

#users inputs pocket number

pocket\_num = float(input('Input a pocket number between 0 and 36: '))

#if statement that determines if pocket number is < 0 or > 36

if pocket\_num < 0 or pocket\_num > 36:

print('Invalid Input!')

else:

#if statement that determines the color of the pocket number

if pocket\_num == 0:

print('The pocket %.0f is green' %pocket\_num)

elif pocket\_num >= 1 and pocket\_num <= 10:

if (pocket\_num % 2 == 0):

print('The pocket %.0f is black' %pocket\_num)

else:

print('The pocket %.0f is red' %pocket\_num)

elif pocket\_num >= 11 and pocket\_num <= 18:

if (pocket\_num % 2 == 0):

print('The pocket %.0f is red' %pocket\_num)

else:

print('The pocket %.0f is black' %pocket\_num)

elif pocket\_num >= 19 and pocket\_num <= 28:

if (pocket\_num % 2 == 0):

print('The pocket %.0f is black' %pocket\_num)

else:

print('The pocket %.0f is red' %pocket\_num)

elif pocket\_num >= 29 and pocket\_num <= 36:

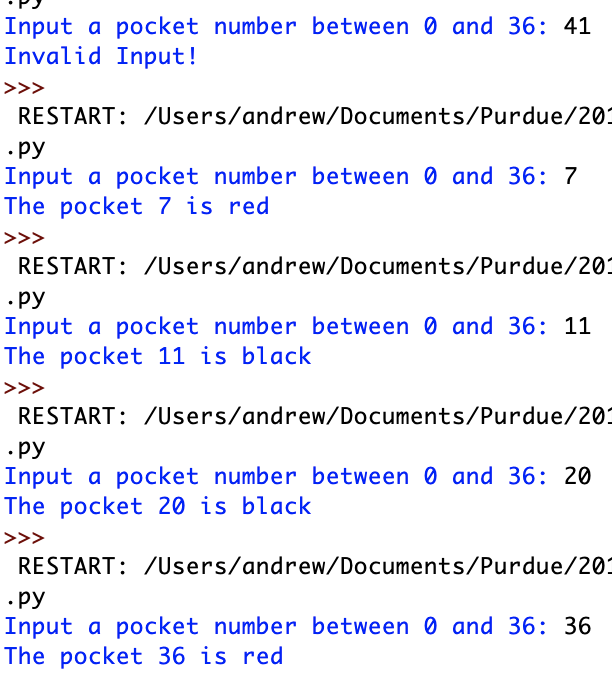
if (pocket\_num % 2 == 0):

print('The pocket %.0f is red' %pocket\_num)

else:

print('The pocket %.0f is black' %pocket\_num)

**Output:**

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################

# Author: Andrew Wang

# Date: 9/19/2019

# This program allows the user to input total number of seconds and the program

# will convert total amount of time into days, hours, minutes, and seconds

#################

#user input total amount of seconds

seconds = float(input('Please enter a number of seconds: '))

#60 seconds in a minute

minutes = 60

#if statement to determine the total number of seconds and calculate days, hours, minutes, and seconds accordingly

if seconds < 60:

print('The number of seconds is less than one minute')

elif seconds >= 60 and seconds < 3600:

minute\_calc = seconds // minutes

second\_calc = seconds % minutes

print('%.0f seconds equal to: %.0f full minute(s) and %.0f second(s).' % (seconds, minute\_calc, second\_calc))

elif seconds >= 3600 and seconds < 86400:

hour\_calc = seconds // (minutes \* minutes)

minute\_calc = seconds % (minutes \* minutes) // minutes

second\_calc = seconds % minutes

print('%.0f seconds equal to: %.0f full hour(s), %.0f full minute(s) and %.0f second(s).' % (seconds, hour\_calc, minute\_calc, second\_calc))

elif seconds >= 86400:

day\_calc = seconds // (minutes \* minutes \* 24)

hour\_calc = seconds % (minutes \* minutes \* 24) // (minutes \* minutes)

minute\_calc = seconds % (minutes \* minutes \* 24) % (minutes \* minutes) // minutes

second\_calc = seconds % minutes

print('%.0f seconds equal to: %.0f full day(s), %.0f full hour(s), %.0f full minute(s) and %.0f second(s).' % (seconds, day\_calc, hour\_calc, minute\_calc, second\_calc))

**Output:  
A screenshot of a social media post

Description automatically generated**

################

# Author: Andrew Wang

# Date: 9/19/2019

# This program allows the user to input velocity, diameter of the pipe, and temperature which the program

# will use it to calculate Reynolds Number which is used in fluid mechanics.

#################

#user input velocity

velocity = float(input('Please input velocity: '))

#user input diameter of the pipe

diameter = float(input('Please input diameter of the pipe: '))

#user input temperature

temperature = float(input('Please input tempeature (5°C, 10°C ,15°C only): '))

#if statement which calculates Renyolds Number according to different temperature.

if temperature == 5:

kin\_visc = 1.49e-6

Re\_num = (velocity \* diameter) / kin\_visc

print('The Reynolds number for a flow at a speed of '+str(velocity)+ ' m/s in a pipe with '+str(diameter)+' m diameter @ '+str(temperature)+'°C is {:.2e}' .format(Re\_num))

elif temperature == 10:

kin\_visc = 1.31e-6

Re\_num = (velocity \* diameter) / kin\_visc

print('The Reynolds number for a flow at a speed of '+str(velocity)+ ' m/s in a pipe with '+str(diameter)+' m diameter @ '+str(temperature)+'°C is {:.2e}' .format(Re\_num))

elif temperature == 15:

kin\_visc = 1.15e-6

Re\_num = (velocity \* diameter) / kin\_visc

print('The Reynolds number for a flow at a speed of '+str(velocity)+ ' m/s in a pipe with '+str(diameter)+' m diameter @ '+str(temperature)+'°C is {:.2e}' .format(Re\_num))

**Output:**

**A screenshot of a cell phone

Description automatically generated**