1. Which of the following are illegal variable names in Python? Write legal or illegal for answer.
2. x - legal
3. 99bottles – illegal – can’t start with numbers
4. july2009 - legal
5. theSalesFigureForFiscalYear - legal
6. r&d – illegal – no special characters
7. grade\_report - legal
8. Look at the following assignment statements:
9. value1 = 99 - int
10. value2 = 45.9 - float
11. value3 = 7.0 - float
12. value4 = 7 - int
13. value5 = 'abc' - char

After these statements execute, what is the Python data type of the values referenced by each variable? Write your answer next to the each assignment statement.

1. Complete the following table by writing the value of each expression in the Value column:

Expression Value

1. 6 + 3 \* 5 21
2. 12 / 2 – 4 2.0
3. 9 + 14 \* 2 − 6 31
4. What do the following operations display?
5. 6/5 1.2
6. 5 // 3 1 – number of times 3 goes into 5
7. 7 % 3 1 - remainder
8. 6\*\*2 36 – 6 squared
9. #Program >>> - it’s a comment
10. Assume the variables a = 2, b = 4, and c = 6. For each of the following conditions to indicate whether its value is true or false. You can circle the correct answer or type true or false.
11. a == 4 or b > 2 T F
12. 6 <= c and a > 3 T F
13. 1 != b and c != 3 T F
14. a >= −1 or a <= b T F

1. You can drive if you age 18 or more. If your age is more than 15 and age is less than 18 you can get a Learner’s permit. If you are below 15 you can not drive. Create an if elif else statement to print the appropriate messages.

age = 16

if age >= 18:

print("You can drive.")

elif age > 15 and age < 18:

print("You can get a Learner's permit.")

else:

print("You cannot drive.")

1. Write a function named times\_ten. The function should accept an argument and display the product of its argument multiplied times 10. Show the function definition and function call.

def times\_ten(num):

result = num \* 10

print(result)

times\_ten(5)

1. Look at the following function definition:

def my\_function(a, b, c):

d = (a + c) / b

print(d)

1. Write a statement that calls this function and uses keyword arguments to pass 2 into a, 4 into b, and 6 into c.

my\_function(2,4,6)

1. What value will be displayed when the function call executes?

2

More Problems that you should know are

Page 164 Problem 12 (Software Sales), Problem 13 (Shipping Charges)

Page 213 Problem 1 (Bug Collector)

Page 214 Problem 8 (Sum of Numbers)

Page 298 Problem 20 (Random Number Guessing game), Problem 21 (Rock , Paper amd Scissors)

**Software Sales**

print("Buy more and save more with our software sales program!")

print("This program will calculate the discount on your purchase based on the number of units you buy.")

units = int(input("Enter the number of units you would like to purchase: "))

if units >=10 and units < 19:

discount = .10

elif units >=20 and units < 49:

discount = .20

elif units >=50 and units < 99:

discount = .30

else:

discount = .40

total\_cost = units \* 99

total\_cost\_discount = units \* 99 \* (1 - discount)

savings = total\_cost - total\_cost\_discount

print(f"You have earned a {discount \* 100:.0f}% discount on your purchase.") # display the discount

print(f"The total cost of your purchase before discount is ${total\_cost:.2f}") # display the total cost

print(f"The total cost of your purchase after discount is ${total\_cost\_discount:.2f}") # display the discount cost

print(f"You saved ${savings:.2f} today!") # display the savings cost

print("Goodbye!")

**Shipping Charges**

print("Welcome to Fast Freight Shipping Company")

print("This program will calculate the shipping charges for a package based on its weight.")

weight = float(input("Enter the weight of the package: "))

if weight <= 2:

shipping\_charges = 1.50

elif weight > 2 and weight < 6:

shipping\_charges = 3.00

elif weight >= 6 and weight < 10:

shipping\_charges = 4.00

else:

shipping\_charges = 4.75

print(f"The shipping charges for the package are ${shipping\_charges:.2f}")

print("Goodbye!")

**Bug Collector**

# Write a program that keeps a running total of the number of bugs collected during the five days. The loop

# should ask for the number of bugs collected for each day, and when the loop is finished, the program

# should display the total number of bugs collected.

print("Welcome to the handy dandy bug collector tracker")

print("This program will help you keep track of the bugs you collect every day for a work week (5 days)")

print("Please enter the number of bugs you collect each day for a week")

# Initialize the variables

bugs\_collected = 0

days = 5

# Get the number of bugs collected each day

for day in range(1, days + 1):

bugs\_collected += int(input(f"Enter the number of bugs collected on day {day}: "))

# Display the total number of bugs collected

print(f"The total number of bugs collected is {bugs\_collected}")

# End of program

**Sum Of Numbers**

# Write a program with a loop that asks the user to enter a series of positive numbers.

# The user should enter a negative number to signal the end of the series. After

# all the positive numbers have been entered, the program should display their sum.

numbers = []

while True:

num = float(input("Enter a positive number (or a negative number to exit): "))

if num < 0:

break

numbers.append(num)

sum\_of\_numbers = sum(numbers)

print("The sum of the positive numbers is:", sum\_of\_numbers)

**Random Number Guessing**

import random

def guess\_number():

random\_number = random.randint(1, 100)

num\_guesses = 0

while True:

user\_guess = int(input("Guess a number between 1 and 100: "))

num\_guesses += 1

if user\_guess > random\_number:

print("Too high! Try again.")

elif user\_guess < random\_number:

print("Too low! Try again.")

else:

print(f"Congratulations! You guessed the number in {num\_guesses} tries.")

break

guess\_number()

**Rock Paper Scissors**

import random

def get\_user\_choice():

choice = input("Enter your choice (rock/paper/scissors): ")

while choice.lower() not in ["rock", "paper", "scissors"]:

print("Invalid choice. Please try again.")

choice = input("Enter your choice (rock/paper/scissors): ")

return choice.lower()

def get\_computer\_choice():

return random.choice(["rock", "paper", "scissors"])

def determine\_winner(user\_choice, computer\_choice):

if user\_choice == computer\_choice:

return "It's a tie!"

elif (user\_choice == "rock" and computer\_choice == "scissors") or \

(user\_choice == "scissors" and computer\_choice == "paper") or \

(user\_choice == "paper" and computer\_choice == "rock"):

return "You win!"

else:

return "Computer wins!"

def play\_game():

computer\_choice = get\_computer\_choice()

user\_choice = get\_user\_choice()

print("Computer's choice:", computer\_choice)

print(determine\_winner(user\_choice, computer\_choice))

play\_game()