Assignment 1: Programming knowledge and skills

Question 1:   
  
print(type({}) is set)

Output: False

Reason: The code uses type function to check if the dictionary is a set? In python, the user has to explicitly set the “set” data type after using curly brackets, by default it is a dictionary

print(type([]) is list)  
  
Output: True

Reason: The code uses type function to check if the list is a list?

Value of 5\*2\*\*10?  
  
power rule applies from right to left so 5×2^10=5×1024=5120

Question 2:

Write a function to accept a filename from the user and print the extension of that.

def file\_extension():

filename = input("Enter a filename: ")

base, extension = filename.rsplit('.', 1)

print("The extension is:", extension)

get\_file\_extension()

Write a function to check whether a number is divisible by another number. Assume that the input is a list and we want the first number t be divisible by the second number.

def is\_divisible(numbers):

if len(numbers) != 2:

print("Error: Please provide a list with exactly two numbers.")

return False

num1, num2 = numbers

if num2 == 0:

print("Error: Cannot divide by zero.")

return False

if num1 % num2 == 0:

print(f"{num1} is divisible by {num2}.")

return True

else:

print(f"{num1} is not divisible by {num2}.")

return False

numbers\_to\_check = [10, 5]

is\_divisible(numbers\_to\_check)

Write a Python function that takes as input a set of N numbers and a list of 10 elements and returns either "Set found" if **any**element of the set is found in the list or  "Set not found" in any other case

def check\_set\_in\_list(numbers\_set, elements\_list):

for number in numbers\_set:

if number in elements\_list:

return "Set found"

return "Set not found"

set\_of\_numbers = {3, 7, 10, 15}

list\_of\_elements = [2, 5, 8, 10, 12, 15, 18, 20, 25, 30]

result = check\_set\_in\_list(set\_of\_numbers, list\_of\_elements)

print(result)

Write a function that will calculate the winner of a basketball game (Team1 or Team2) by taking as input 2 lists with the following format [1 -pointer scored, 2 -pointers scored, 3-pointers scored])

def calculate\_basketball\_winner(team1\_scores, team2\_scores):

if len(team1\_scores) != 3 or len(team2\_scores) != 3:

return "Invalid input format. Please provide lists with three elements each."

team1\_points = 1 \* team1\_scores[0] + 2 \* team1\_scores[1] + 3 \* team1\_scores[2]

team2\_points = 1 \* team2\_scores[0] + 2 \* team2\_scores[1] + 3 \* team2\_scores[2]

if team1\_points > team2\_points:

return "Team1 is the winner!"

elif team2\_points > team1\_points:

return "Team2 is the winner!"

else:

return "It's a tie!"

team1\_scores = [3, 5, 2] # [1-pointer, 2-pointer, 3-pointer]

team2\_scores = [2, 4, 3]

winner = calculate\_basketball\_winner(team1\_scores, team2\_scores)

print(winner)