Total (50%):\_\_\_\_\_\_\_ Name/Class Registered: \_\_\_\_\_\_\_\_\_\_\_

**DA 401/501 CSC 430/530 Test #1 (50 minutes)**

**Python Programming**

**Part 1: This is closed book/closed notes/no internet exam.**

**For some questions, the answer I provided is only one of the possible answers.**

1. **Please complete the following Python code [5 points]**
2. declare an integer variable (need to have a name) with value 10

n = 10

1. declare a floating-point variable (need to have a name) with value 3.14

pi = 3.14

1. declare a string type variable(name) with given value “Python”

name = “Python”

1. declare a Boolean type variable(name) with given value “True”

flag = True

1. Among the 4 data types above, which one/ones is/are immutable:

integer, floating-point, string, and boolean.

1. **Please complete the following Python codes: [5 points]**
2. This is an example:

declare a list (give a name) with values 1, 2, 3, 4

num\_list = [1, 2, 3, 4]

1. declare a tuple (name) with given values “Mon”, “Tue”, “Wed”, “Thu”, “Fri”, “Sat”, “Sun”

week = (“Mon”, “Tue”, “Wed”, “Thu”, “Fri”, “Sat”, “Sun”)

1. declare a dictionary (name) with key:value pairs: ‘A’ equals 4, ‘B’ equals 3, ‘C’ equals 2, ‘D’ equals 1, and ‘F’ equals 0.

grades = { ‘A’ : 4, ‘B’: 3, ‘C’ : 2 , ‘D’: 1, ‘F’:0}

1. declare a set with a name and given color values “Red”, “Green”, and “Blue”

colors = {“Red”, “Green”, “Blue”}

1. Among the above data types, which one/ones is/are immutable:

Tuple only

1. Among the 4 data types above, which ones have no order:

Set and Dictionary (Version 3.6 or before) have no order

1. **Multiple Choice Questions: [10 points]**

**highlight the correct answer(s) or write down your answer(s)**

* 1. Which of the following statements is true? [2 Points]

1. = = means assignment
2. = = means check equality
3. = and = = can be used interchangeably in Python statements
   1. Which of the following operators is the logical AND operator? [2 Points]

a) and

b) &&

c) or

d) ||

* 1. Which of the following expressions is correct code under either of the following conditions? [2 Points]
* A leap year is the year divisible by 4 but not by 100
* A leap year is the year divisible by 400

a)(leap\_year%4==0 and leap\_year%100 != 0) and leap\_year%400 == 0

b)(leap\_year%4==0 or leap\_year%100 != 0) or leap\_year%400 == 0

c)(leap\_year%4==0 and leap\_year%100 == 0) or leap\_year%400 == 0

d)(leap\_year%4==0 and leap\_year%100 != 0) or leap\_year%400 == 0

* 1. A break statement can be used to: [2 Points]

1. break out multiple if statements
2. terminate a loop
3. both a and b
   1. Which data type is the variable xyz after you typed in 10, 20, 30? [2 Points]

xyz = input(“please type in three numbers”).split( )

a) Integer type

b) String type

c) List type

1. **Looping and conditional selection [10 points]**
   1. The following code generates the exact same outputs. [2 Points]

|  |  |
| --- | --- |
| for item in range(10, 0, -1):  print(item) | item = 10  while (item > 0):  print(item)  item = item - 1 |

TRUE FALSE

* 1. How many times are “Hello” displayed? Explain your answer? [2 Points]

count = 0

while (count < 3):

print(“Hello”)

count = count + 1

infinite. The count cannot be updated as it is outside of the loop. The loop will never stop.

* 1. what numbers are printed?

[2 Points]

|  |  |
| --- | --- |
| i = 0  while ( i<10):  if ((i)%2 == 0):  print(" i = ", i)  i = i + 1  print(" i = ", i) | Exact print out:  YOU ANSWER:  i = 0  i = 2  i = 4  i = 6  i = 8  i = 10 |

* 1. What are the printouts after you execute the following code [2 points]

xyz = [-1, 4, 1, 3, 2, 0]

for i in range(len(xyz)):

print(xyz[xyz[i]], end = " ")

Answer: 0 2 4 3 1 -1

* 1. What will be the output after you type in letter y? why? [2 points]

while True:

play = input("do you want to play again (y/n): ")

if play != 'y' or play != "Y":

print("Good bye!")

break

Answer: Good bye, because the second check play != “Y” is true, then if is True. Print Good bye then break the while loop.

1. **Functions [10 points]**
   1. What is a global variable and what is a local variable? What are the differences?

[2 points]

* Global variable is the top-level variable, not inside of any function.
* Local variable is the variable defined inside a function.

* Global variable is accessible everywhere, but local variable is only accessible in its scope which is inside the function which defines it.
  1. The following code is used to update the balance based on win-lose. If there is an error, what is the error and how to fix it? If there is no error, what are the outputs?

[3 points]

balance = 1000

print(balance)

def update(win, money):

if win == True:

balance = balance + money

else:

balance = balance - money

print(balance)

update(False, 100)

print(balance)

There is an error:

local variable 'balance' referenced before assignment

* 1. When you pass data to function arguments, which one is correct? [2 points]
* Pass by values
* Pass by names
* Pass by object references
  1. What are the outputs of the following code: [3 points]

x = 1

y = 2

z = [3, 4, 5]

print(x, y, z)

def fun\_3(a, b, c):

a = b\*2

b = a\*2

c[1] = a\*b

return a, b, c

u, v, w = fun\_3(x, y, z)

print(u, v, w)

print(x, y, z)

1 2 [3, 4, 5]

4 8 [3, 32, 5]

1 2 [3, 32, 5]

**if you are a CSC 530 student:**

**complete the Question 6**

**else: # you are a CSC 430 or DA 401/501 student:**

**stop here**

**get 10 points**

1. **Application of list and dictionary [10 points]**

Write a python program to find out who has the highest grades then print out the name

# given data:

student\_grades = [{'John': [10, 9, 8, 7, 6]},

{"Jack": [5, 6, 7, 8, 10]},

{"Judy": [10, 7, 9, 8, 9]} ]

# your code:

name = [ ]

grade = [ ]

# loop the list first, each element is a dictionary

for d in student\_grades:

for k, v in d.items(): # for dictionary, find the pair-data

name.append(k) # each person’s name

grade.append(sum(v))# total grades for each person

ind = grade.index( max(grade)) # use the highest grade’s index

print(name[ind]) # matches the person’s name

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