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CSCI 150
Exam 2
April 22, 2016

There are 6 numbered questions here. Numbers 1-4 are worth 15 points each. The two parts of question 5 are worth 10 points each. Question 6 is worth 20 points.

1. What will this print? Read it carefully.

```
def foo(D, key, value):
    D[key] = value

def bar(D):
    for k in D.keys():
        print( k, D[k])

def main():
    D = {} # keys is a string; value is a number.
    foo(D, "A", 23)
    foo(D, "B", 42)
    foo(D, "A", 57)
    foo(D, "C", 15)
    bar(D)

main()
```

2. What will this print? Read it carefully.

```
class What:
    def __init__(self, name):
        self.name = name
        self.value = 0

    def foo(self, x):
        self.value = x

    def __str__(self):
        return self.name

def main():
    D = What( "bob" )
    D.foo(23)
    D.foo(45)
    D.foo(71)
    print(D)

main()
```

3. What is wrong here? The following program makes a list L1 that contains some prime numbers, and it tries to copy that data into a new list L. This crashes with an error message that says “List assignment index out of range” for the line B[i]=A[i]. Explain what is wrong in one English sentence and correct the code so that the Copy function will work.

```
def Copy(A, B):
    # this copies list A to list B
    for i in range(0, len(A)):
        B[i] = A[i]

def main():
    L1 = [2, 3, 5, 7, 11, 13, 17]
    L = []
    Copy(L1, L)
    print(L)

main()
```

4. Here is a Person class and a short main() program that uses it. Unfortunately this crashes with the error message: “__init__ takes 1 positional argument but 2 were given.”
- a) What two arguments were given to __init__?
 - b) Fix the class definition so that all of the methods are correct.

```
class Person:
    def __init__(name):
        name = name
        age = 0

    def setAge(a):
        age = a

    def __str__():
        return name

def main():
    x = Person( "bob" )
    x.setAge(64)
    print(x)

main()
```

5. a) I have a list of pairs, such as [("bob", 64), ("Mary", 18), ("Isabel", 20), ("Gabe", 24)]. Write a function `FindAge(L, name)` where `L` is such a list. This returns either the age of the person in the list with that name (such as 18 for "Mary"), or `None` if there is no person in the list with that name.

b) Now I have a dictionary `D` with the data from (a): `D["bob"]=64`, `D["Mary"]=18`, and so forth. Write a function `FindAge(D, name)` where `D` is such a dictionary. This returns either the age of the person in the dictionary with the given name or else `None` if there is no such person.

6. Write a class to represent a player in a game where players take turns rolling a pair of dice (each die has the numbers 1 through 6). The class has 3 methods:
- a) The constructor takes as an argument the player's name and saves this in a variable.
 - b) The Turn method takes no arguments. It rolls each of the two dice (with `random.randint(1, 6)`) and prints the two dice values. If the two values are the same it rolls again and the turn continues until the dice values are different. The value of each roll is added onto the player's score.
 - c) The Print() method also takes no arguments. It prints the player's name and score

For example, if we write an application program like this:

```
def main():  
    b = Player( "bob" )  
    b.Turn()  
    b.Turn()  
    b.Print()
```

```
main()
```

we might get output:

```
bob rolled 5 and 6  
bob rolled 6 and 6  
bob rolled 5 and 1  
bob has 29 points
```

Your job is to write class Player.

This page can be used for extra room for any question.

Please write and sign the Honor Pledge when you have finished the exam. If you have taken the exam outside of class, please add your starting and stopping times.