Exam 3 – Paper and Pencil part - Fall, 2020-21

Name: _____ Section: _____

Rules and Expectations

At the beginning of this exam, you will receive the **Expectations about Academic Integrity** for this exam -- it is the same as what you were given to read previously. Re-read that document as needed. ***Sign it and turn it in when you finish this exam (both parts).***

Two parts (this is Part 1, Paper-and-Pencil)

For this part, the ONLY external resource you may use is a single 8½ by 11-inch sheet of paper, with whatever you want on it, typed or handwritten or a combination of the two. **You may use BOTH sides of the sheet** (or you may use TWO sheets of paper but using only ONE side of each). You must have prepared the sheet *before* beginning this exam. You may also use a calculator if you like (but only for calculating), along with blank paper.

Problem	Points Possible	Points Earned	Comments
1	**7**		
2	**7**		
3	**16**		
Total (of 100 on the exam)	**30**		

Communication

For both parts of the exam, ***you must not communicate with anyone*** except your instructors and their assistants, if any. In particular:

- You must not talk with anyone else or exchange information with them during this exam.
- After this exam, you must not talk about the exam with anyone who has not yet taken it.

Do NOT use email, *chat* or the like during this exam. **Close any such applications now.**

1. Consider the code snippet below. It is a contrived example with poor style, but it will run without errors. **What does it print when it runs?**

   Write your answer in the box to the right of the code. **Showing your work (in any way you wish) is the best way to allow for partial credit.**

```
r = 10
while True:
    r = r + 3
    if r > 20:
        break
    print(r)
print("A:", r)


total = 0
while total < 8:
    print(total)
    total = total + 2
print("B:", total)
```

Output:

2. Consider the code snippet below. It is a contrived example with poor style, but it will run without errors. **What does it print when it runs?**

   Write your answer in the box to the right of the code. **Showing your work (in any way you wish) is the best way to allow for partial credit.**

```
for j in range(4):
    b = 100
    print(j, b)
    for k in range(j, 3):
        print(j, k, b)
        b = b + j + k
print(b)
```

Output:

3. Consider the code snippet below It is a contrived example with poor style but will run without errors.

   On the opposite page, draw a ***box-and-pointer diagram*** that shows the execution of the code. Then, show ***what gets printed*** in the indicated box below

Assume that Point and Circle classes are defined as usual for paper-and-pencil problems, where Point objects have instance variables ***x*** and ***y,*** and Circle does NOT clone its Point argument, as shown below.

```
class Circle(object):
    def __init__(self, center, r):
        self.center = center
        self.radius = r
```

Assume Point and Circle objects print as in these examples:

Point(70, 25) *Circle(Point(70, 25), 50)*

In the space below, show what gets printed:

```
def main():
    a = 580
    r = 25
    p = Point(a, 88)
    c = Circle(p, r)
    s = [30, p]
    blah(a, p, c, s)

    print(a)
    print(r)
    print(p)
    print(c)
    for k in range(len(s)):
        print(k, s[k])


def blah(a, p, c, s):
    a = 92
    p.x = 47
    c.radius = 33
    c.center.y = 101
    s[0] = 444
    s[1].y = 6
    p = Point(111, 222)


main()
```

Draw your box-and-pointer diagram here:

This space intentionally left blank. Use it for scratch work as desired.

This space intentionally left blank. Use it for scratch work as desired.

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