**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**: |

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.**

|  |  |
| --- | --- |
| 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:** |

1. 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)* | 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() |
| **In the space below, show what gets printed**: |

|  |
| --- |
| **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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