

## Homework 3

Due date: Monday February 9, 11:59pm

List comprehension: You will need to review materials on lists (use the python website to do so, for example <https://docs.python.org/2/tutorial/datastructures.html#list-comprehensions>) List comprehension is the process where we manipulate elements in a list, for example the following statement is equivalent to a for loop: `[i**3 for i in range(4,9)]`

Before you type the above example in python guess the result. There are many ways this list comprehension approach can be used, for example this fragment calculates all prime numbers from 2 to 50:

```
>>> noprimes = [j for i in range(2, 8) for j in range(i*2, 50, i)]
>>> primes = [x for x in range(2, 50) if x not in noprimes]
>>> print primes
[2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47]
```

Write very short python fragments to do the following:

1. Print a list of all odd numbers from 1 to 21 using two lines (1 line list comprehension, one line "print")
2. Print a list of square numbers from the largest to the smallest (start with  $x^2 = 100$ )
3. Print a list of 10 random integer numbers drawn from a uniform distribution  $[3, 8)$ , (a) show the result, (b) get all unique numbers from your list.
4. Generate a 2D grid of where each element is the tuple of the row and column, print the result