Lesson 24:

1. Quiz: Family Trees

def ancestors(genealogy, person):

ancestors\_list = list()

if person in genealogy:

append\_parents(genealogy, person, ancestors\_list)

for relative in ancestors\_list:

if relative in genealogy:

append\_parents(genealogy, relative, ancestors\_list)

return ancestors\_list

def append\_parents(genealogy, person, ancestors\_list):

for parent in genealogy[person]:

ancestors\_list.append(parent)

return ancestors\_list

1. Quiz: Khayyam Triangle

def generate\_row\_data(previous\_row):

new\_row\_data = list()

new\_row\_data.append(1) # add 1 to start of new\_row\_data

for x in range(0, len(previous\_row) - 1):

new\_row\_data.append(previous\_row[x] + previous\_row[x + 1]) # add inner part of new\_row\_data

new\_row\_data.append(1) # add 1 to end of new\_row\_data

return new\_row\_data

def triangle(n):

pascals\_triangle = list()

if n > 0:

pascals\_triangle.append([1])

if n > 1:

pascals\_triangle.append([1, 1])

row = 2

while row < n:

pascals\_triangle.append(generate\_row\_data(pascals\_triangle[-1]))

row += 1

return pascals\_triangle

1. Quiz: Only a Little Lucky

def ordered\_search(index, ranks, keyword):

look = lookup(index, keyword)

if look:

relevant\_ranks = []

for item in look:

if item in ranks:

relevant\_ranks.append([item, ranks[item]])

relevant\_ranks = quicksort\_ranks(relevant\_ranks)

ordered\_urls = list()

for rank in relevant\_ranks:

ordered\_urls.append(rank[0])

return ordered\_urls

else:

return None

def quicksort\_ranks(ranks):

if len(ranks) <= 1:

return ranks

else:

pivot = ranks[0]

less\_than\_pivot = list()

equivalent\_to\_pivot = list()

greater\_than\_pivot = list()

for item in ranks:

if item[1] < pivot[1]:

less\_than\_pivot.append(item)

elif item[1] == pivot[1]:

equivalent\_to\_pivot.append(item) # this will not need to be recursively sorted

else:

greater\_than\_pivot.append(item)

# returning greater first because we want the best links first

return quicksort\_ranks(greater\_than\_pivot) + equivalent\_to\_pivot + quicksort\_ranks(less\_than\_pivot)