COS226 Week 9 Group Activity

1. Seam carving. The image below is 5 columns by 6 rows with artificially small colors. Each color is listed as (R, G, B).

```
(0,  1,  3)    (3,  3,  1)    (2,  2,  0)    (0,  2,  2)    (1,  1,  2)
(1,  2,  3)    (0,  2,  2)    (3,  3,  3)    (3,  1,  3)    (3,  3,  1)
(2,  3,  0)    (2,  3,  0)    (2,  2,  3)    (2,  2,  1)    (2,  1,  1)
(2,  3,  0)    (3,  3,  0)    (3,  0,  1)    (3,  2,  1)    (1,  0,  3)
(3,  0,  2)    (2,  2,  1)    (1,  2,  2)    (2,  1,  1)    (3,  2,  2)
(3,  2,  1)    (3,  2,  0)    (3,  1,  3)    (1,  3,  2)    (2,  1,  1)
```

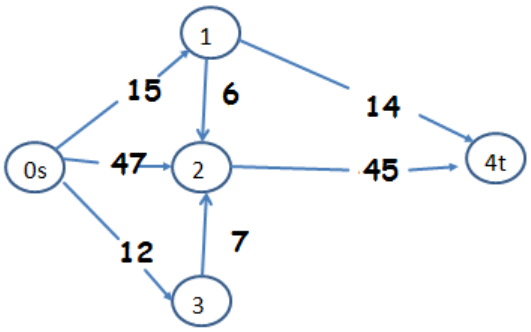
   The array below has most of the energy values calculated with the colors given above (which have artificially low values), fill in the blanks below by calculating the energy for (3, 0) and (1, 1) and (2, 3). Then calculate the horizontal seam and circle it.

195075	195075	195075		195075
195075		20	9	195075
195075	24	15	10	195075
195075	13		9	195075
195075	9	6	10	195075
195075	195075	195075	195075	195075

   Use this copy of the array above to calculate the vertical seam and circle it.

195075	195075	195075		195075
195075		20	9	195075
195075	24	15	10	195075
195075	13		9	195075
195075	9	6	10	195075
195075	195075	195075	195075	195075

2. Write the augmenting paths and determine the min-cut of the following FlowNetwork. Edges are labeled with their maximum capacity. Assume ascending order to break ties. Algorithms textbook 6.4



3. Suppose that you run MSD radix sort (do not cutoff to insertion sort for small subarrays) on the following array of jelly bean flavors. What is the array immediately after performing key-indexed counting for the third time?

```
plum

lemon

banana

apple

peach

bacon

grape
```

4. For each data set below, list which string sort algorithms (Quicksort, LSD, MSD, 3-way string quicksort) is particularly poorly suited compared to the others.

   (a) Social security numbers