Homework Project 4

Given 11/20/2019, Due 12/11/2019

The aim of the project is to create a function that implements the Kernighan-Lin Algorithm to partition a graph in two parts. The function prototype is

```
struct v_l { int v; struct v_l *next;};
typedef struct v_l vertex_list;
vertex_list * graph_part(int n, int k, vertex_list * edges[], int r );
```

The function takes a graph with `n` vertices, given as an array of `n` pointers to vertex lists (giving the neighbors of each vertex) and a parameter `k`; it returns a list of `k` vertices such that the partition of the graph into these `k` vertices and the remaining `n-k` vertices has as few edges as possible across the partition. The vertices are numbered `0` up to `n-1`. The parameter `r` gives the number of random start partitions that are tried.

The idea of the Kernighan-Lin partitioning heuristic is to start with a random partition of the desired size, and improve it by swapping nodes greedily, until no improvement is reached. You need to keep track of the best partition you found, and return that.

Submit your source code by e-mail to `phjmbrass@gmail.com`; include the course (I06) and homework number in the subject line, and your name as a comment in the homework file. If you submit multiple files, you can pack them with the `tar` archiver.