|  |  |
| --- | --- |
| 1 | **procedure** BALANCED-CENTROIDAL-POWER-DIAGRAM(*P*, *k*) |
| 2 | // Input: *P* is a list of population centers |
| 3 | // Input: *k* is the desired number of regions |
| 4 | // Output: *C* is a list of k centers for the balanced centroidal power diagram |
| 5 | // Initialize C to be a random selection of *k* population centers |
| 6 | // Initialize f : *P* -> *C* so that it assigns each population center to the least cost center in *C* |
| 7 | **while** *C* and *f* are changing |
| 8 | **update** *f* : *P* -> *C* so that each point in *P* is assigned to the least cost center |
| 9 | // Note that cost is , where is the Euclidean distance and is a constant for |
| 10 | // the center. |
| 11 | **update** *C* so that it is moved to the centroid of the residents. |
| 12 | // Points in C will not coincide with P after the first iteration |
| 13 |  |
| 14 | **return** *C* |
|  |  |