

INDU 421: Facilities Design and Material Handling Systems

Assignment 7

- 1- Given the relationship chart below determine the sequence of the placement of the departments in the layout based on the CORELAP algorithm. Find the best layout assuming that all the departments are of equal size. Use these closeness values: A=4, E=3, I=2, O=1, U=0, X=-4 and consider half weight if the departments are only touching by one point.

| | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 1 | - | I | A | I | I |
| 2 | | - | U | O | I |
| 3 | | | - | E | U |
| 4 | | | | - | X |
| 5 | | | | | - |

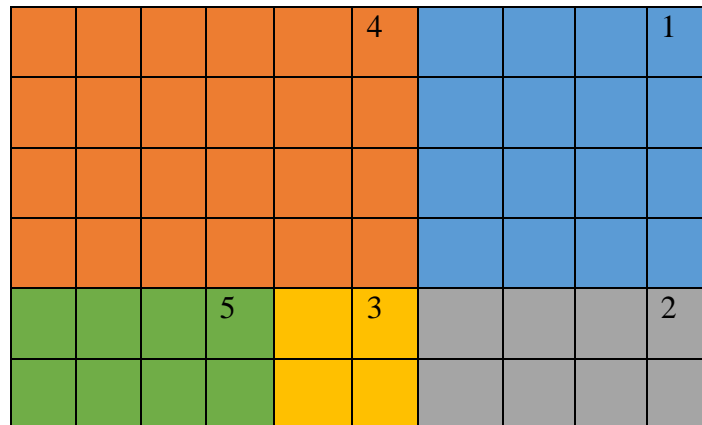
- 2- Use ALDEP procedure to determine the layout vector and construct the block layout for the facility based on the relationship chart and the departmental dimensions given below. Evaluate your layout with adjacency score and efficiency rating. The dimensions of the building are 90ftx150ft. Use the sweep width of 3, the minimum acceptable level of importance “E” and the following closeness values: A=64, E=16, I=4, O=1, U=0, X=-1024.

| Department | Area (ft ²) | 1 | 2 | 3 | 4 | 5 |
|------------|-------------------------|---|---|---|---|---|
| 1 | 3,600 | - | I | A | I | I |
| 2 | 2,700 | | - | U | O | I |
| 3 | 1,800 | | | - | E | U |
| 4 | 3,600 | | | | - | X |
| 5 | 1,800 | | | | | - |

- 3- Consider BLOCPLAN. Suppose the following REL-chart and layout are given for a five department problem. (It is assumed that each grid in the layout represents a unit square.)

Further suppose that the following scoring vector is being used: A=10, E=5, O=1, U=0, and X=-10.

| | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 1 | - | A | U | E | U |
| 2 | | - | U | U | I |
| 3 | | | - | U | X |
| 4 | | | | - | A |
| 5 | | | | | - |



- Compute the “efficiency rating.”
 - Compute the REL-DIST score.
- Consider the layout shown in your lecture (slide 37). Use LOGIC and make the cut-tree to exchange departments B and F.
 - Explain the steps M-CRAFT would take with the following problem and determine the final layout. Number of Bands: 3

Initial Layout

| | | | | | |
|---|---|---|---|---|---|
| A | A | A | B | B | B |
| A | A | A | C | C | C |
| A | A | A | C | C | C |
| D | D | D | E | E | E |
| D | D | D | E | E | E |