I.T.U.

Faculty of Computer and Informatics

Computer Engineering

ANALYSIS OF ALGORITHMS II

CRN : 23019

PROJECT 03 REPORT

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Ruquired Questions in Report

1)

Program has two class :

Customer

- `int id`: **for storing customer id**
- `int pair;` **for storing pair id**
- `vector<int> apartment_list;` **storing apartment preference list**

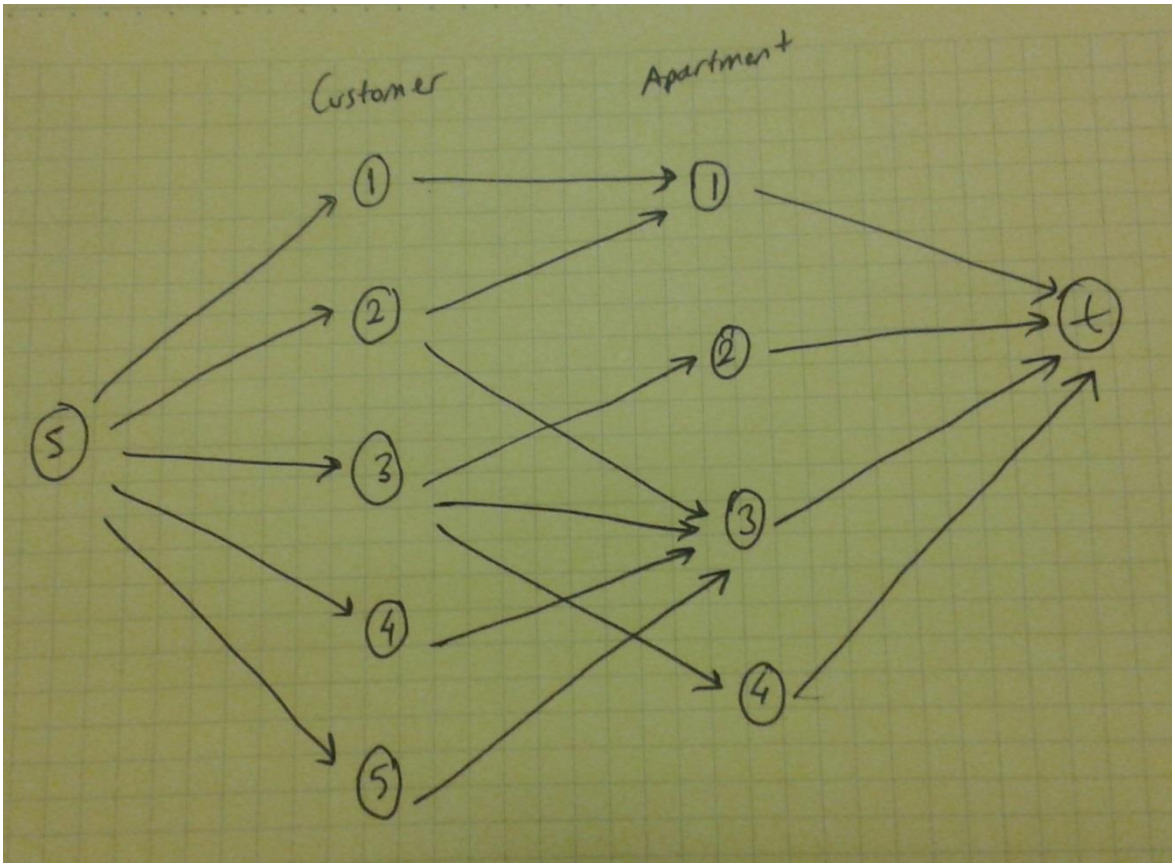
Agent

- `vector<vector<bool> > Graph;` **for storing grapg**
- `vector<Customer> pair_list;` **for storing pair list**
- `vector<Customer> customer_list;` **for storing customer list**
- `int global_v`: **used in pairing**
- `int global_u;` **used in pairing**
- `int apartment_number;` **for storing apartment number**
- `int customer_number;` **for storing customer number**
- `Agent():` **constructor**
- `void create_matrix()` **: for creating matrix**
- `void read_from_file(char *file_name):` **for reading from input file**
- `int find_customer_number():` **for finding customer number**
- `int find_apartment_number():` **for finding apartment number**

- `bool is_exist(int u,vector<bool> is_seen,vector<int> match_r)`: **is pair exist**
- `void max_bipartite_maching()`: **used for maximumum bipartite matching**
- `void write_input_file()`: **for writing input file to console**
- `void write_matrix()`: **for writing matrix to console**
- `void write_pairs()`: **for writing pairs to console**

2)

First i connect customer nodes to apartment nodes.



3)

Then i put two extra node; s and t nodes. Then i connect s to customer nodes and apartment nodes to t and add flow to edges.

4)

PseudoCode	Complexity
To construct E	
For each item j	(m)
V_j: set of nodes to be connected to item i	
V_j=0	
For each customer u	(n)
If u bought j	
$V_j = V_j \cup \{u\}$	
Connect all the nodes in V_j	(n^2)

5)

m = customer number , n = apartment number

O((m+2*n)) = O(m*n + n^2) = O(m*n)