CS5560 Knowledge Discovery and Management

Problem Set (PS-1A)

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We are supposed to build a knowledge graph for the following input (text data).

1. Describe your knowledge about knowledge graph.
2. Why do we want to build such a knowledge graph?
3. What steps are required? Show your own workflow for this task.
4. What are the challenges?
5. Draw a knowledge graph for the given data.

CHICAGO (AP) — Citing high fuel prices, United Airlines said Friday it has increased fares by $6 per round trip on flights to some cities also served by lower-cost carriers. American Airlines, a unit AMR, immediately matched the move, spokesman Tim Wagner said. United, a unit of UAL, said the increase took effect Thursday night and applies to most routes where it competes against discount carriers, such as Chicago to Dallas and Atlanta and Denver to San Francisco, Los Angeles and New York.

**ANSWERS**

1] The “[knowledge graph](http://searchengineland.com/library/google/google-knowledge-graph)” is a database that collects millions of pieces of data about entities and their relationships. With the knowledge graph, users can get information about people, facts and places that are interconnected in one way or the other. The collected information about the objects such as movie, person etc. and the relevant information like movie release date, cast for movie and height, age, date of birth for person etc. It also connects relevant objects in the world web to other objects in graph.

2] Knowledge graph helps people to get quick information as soon as they enter the search keyword about a place, person, organization etc. can be any real-world object. It helps in exploring the topic with all possible relevant information together.

3] Knowledge graph generation typically goes through below steps:

step1: Identifying the entities i.e. real world objects like name of location, person, literal values, events etc. The entities become nodes in knowledge graph.

step2: Establishing relationships between entities can be one-one/ one-many between nodes identified above.

Step3: Organizing the collected data and constructing a knowledge graph.

Work flow:

1. Identifying the entities (locations, organizations, person etc.):
   1. Organizations: UAL, AMR, United Airlines, American Airlines.
   2. Locations: Chicago, Dallas, Atlanta, Denver, San Francisco, Los Angeles, New York.
   3. Day: Friday, Thursday.
   4. Person: Tim Wagner
   5. Amount: $ 6
2. Identifying the relationship between the organizations, locations, day, person and amount entities like:
   1. united airlines is a unit of UAL
   2. American airlines is a unit of AMR
   3. Roundtrip: Chicago to Dallas and Atlanta.

Denver to San Francisco, Los Angeles, New York.

* 1. Day: Announcement on Friday, Effective from Thursday night

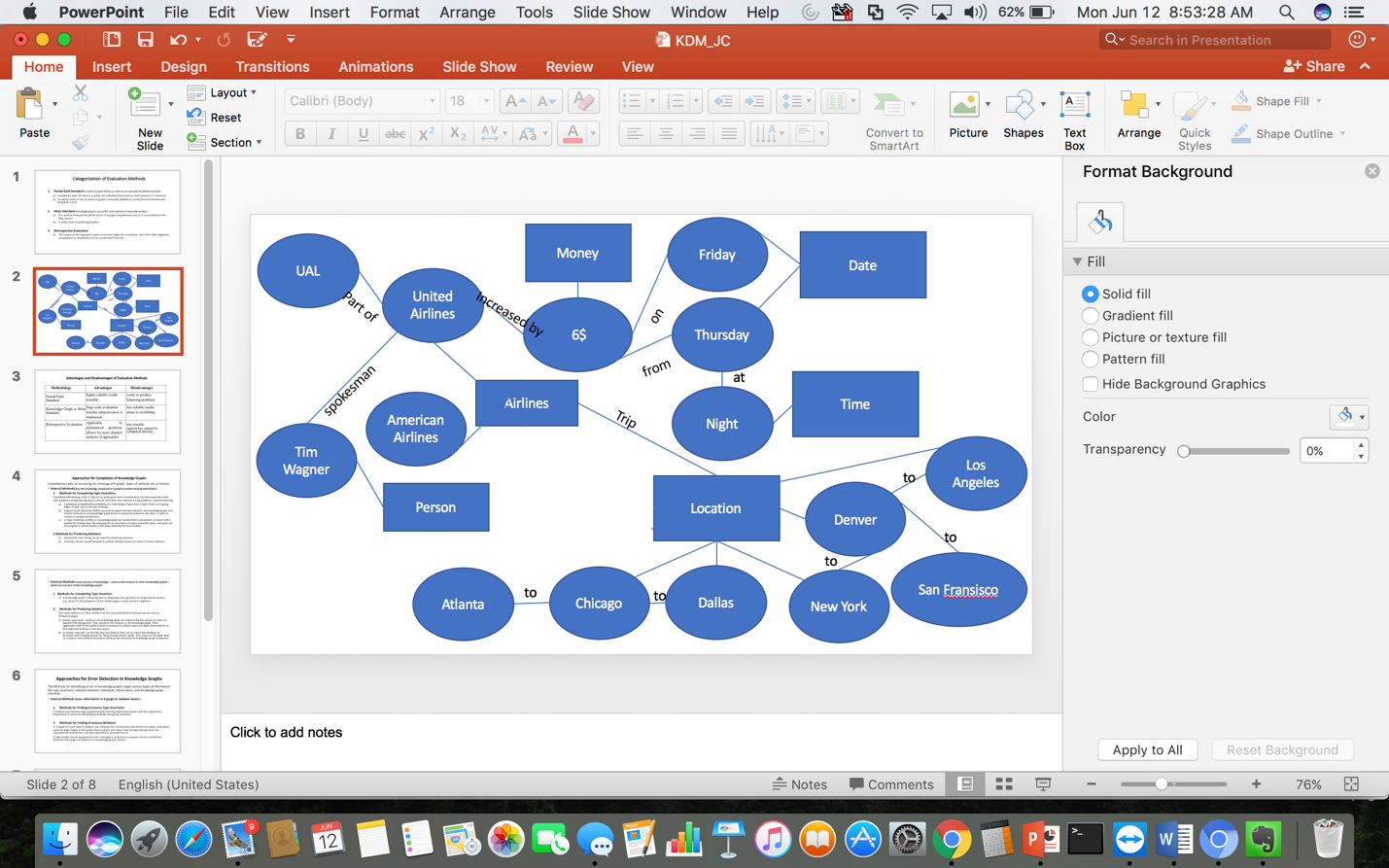
1. Connecting the relationship within the same and the other entities and constructing a knowledge graph.
   1. United Airlines, American Airlines increased the price by 6$.
   2. Spokesman Tim Wagner of AMR group also announced.
   3. Inflated price on discount carrier routes also.

4] The challenges in knowledge graph construction are:

1. Identifying the entities
2. Identifying relationships between edges to the entity nodes
3. Co reference relationship for the UAL and AMR
4. Organizing data to construct the knowledge graph

5]

**Knowledge Graph:**

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