

CHAPTER 3

INTRODUCTION SEMANTIC WEB

- Web : Linked Documents
- Semantic Web :
 - Resources
 - In the Semantic Web we refer to the things in the world as resources.

H3 1. Distributing Data across the Web

- Why distributing data ?

Distribution solution provides **considerable flexibility**.

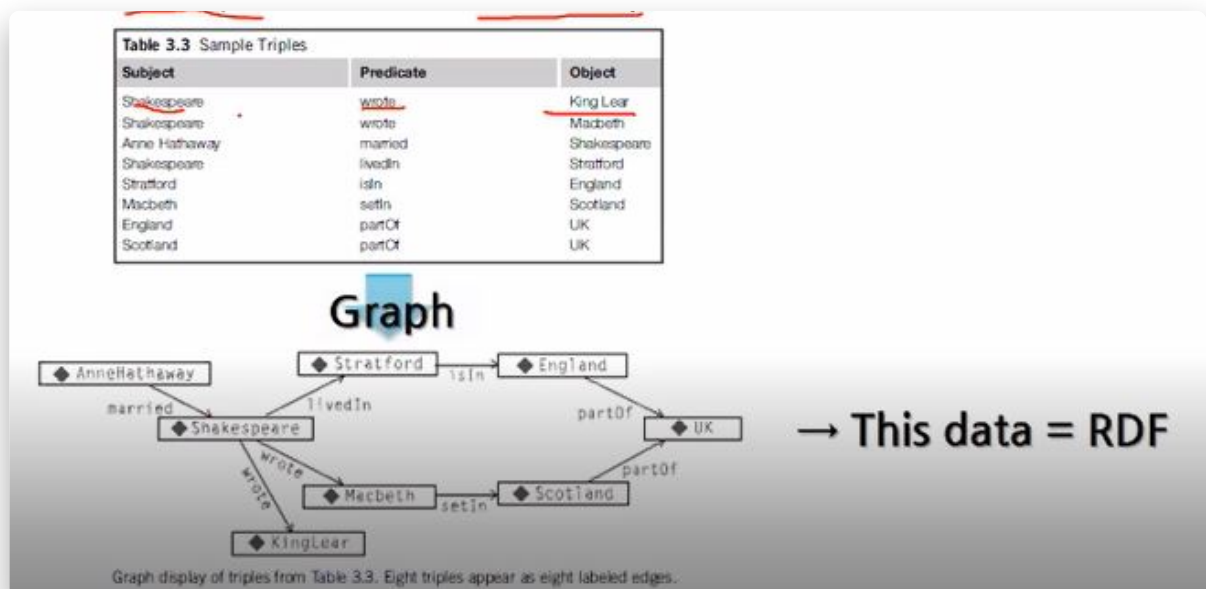
- Since the machines can share the **load** of representing information about several.
- Strategies
 01. Row by row
 02. Column by column
 03. Cell by cell
- Cell by cell
 - Row by row * Column by column
 - Cell by cell has both of benefits
 - Cost
 - **Combines the costs of the two strategies**
 - Global Reference : Column & Row
 - In fact, each cell has to be represented with three values
 01. Global reference for the row
 02. Global reference for the column
 03. The value in the cell itself.
- Triple

- RDF (Resource Description Framework) - Cell by Cell
- Since a cell is represented with three values, the basic building block for RDF is called the **triple**
- Example:

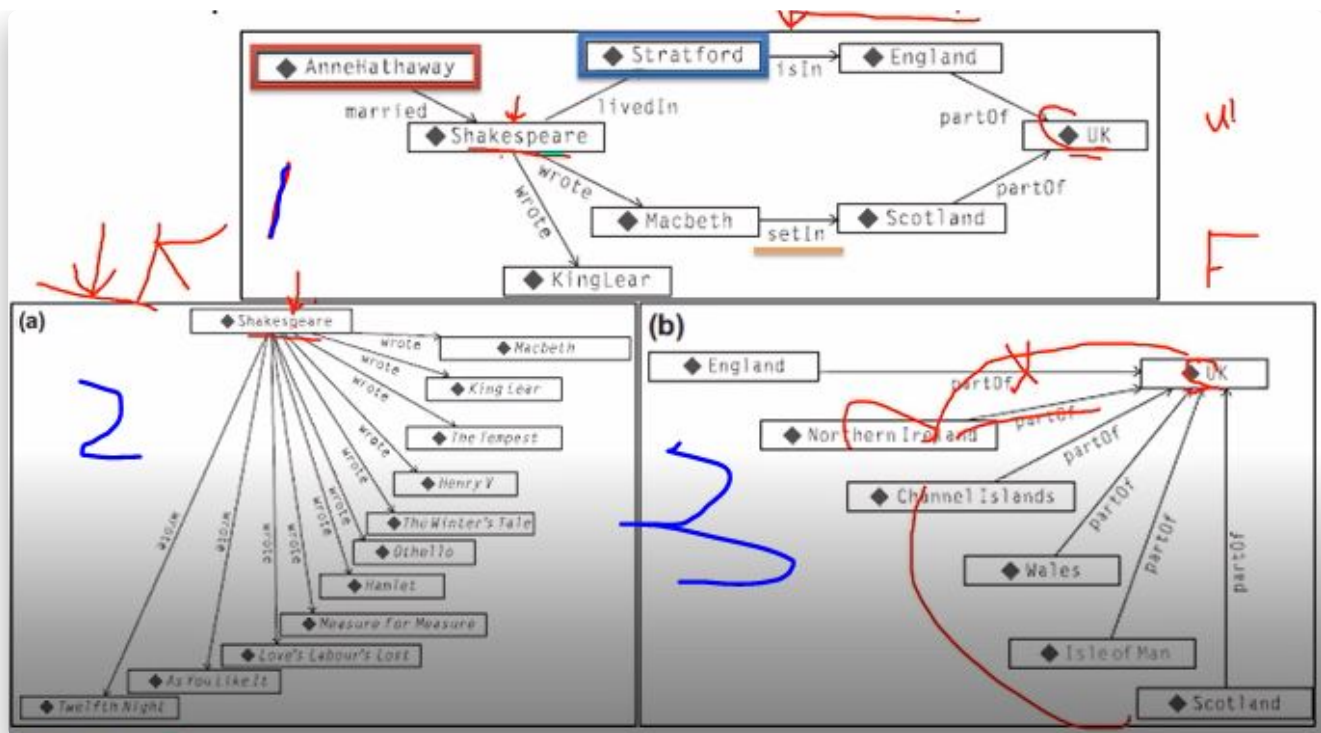
Triple : Subject, Predicate, Object

Subject	Predicate	Object
Row 7	Medium	Poem
Row 2	Title	Hamlet
Row 2	Year	1604
Row 4	Author	Shakespeare
Row 6	Medium	Play

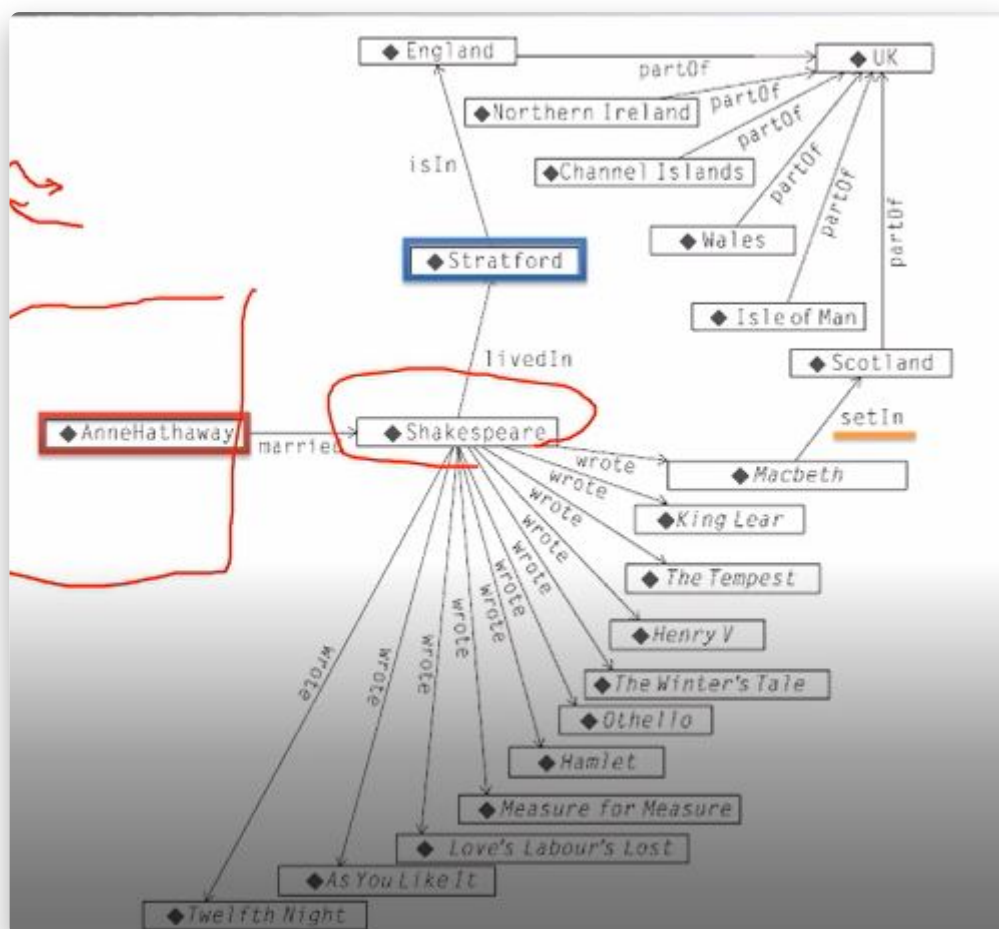
- Directed Graph
 - One triple refers to the same entity.



H3 3. Merging Data from Multiple Sources



1 + 2 + 3 ==>



H3 3. Namespace, URIs, and Identity

- Uniform Resource Identifiers(URI)
 - How to recognize a node in one graph the same node as a node in another graph?
 - RDF borrows its solution to this problem from foundational Web technology
 - In particular, the **URI** = (Global Identification)
- QName
 - URI : Too long
 - So for the examples in this book
 - Abbreviation scheme : QName
 - By a colon (:)
 - :Shakespeare, :JamesDean, :Researcher
- Standard NameSpace
 - rdf : Indicates identifiers used in RDF. The set of identifiers defined in the standard is quite small and is used to define types and properties in RDF.
 - rdfs : Indicates identifiers used for the RDF Schema language, RDFS.
 - owl : Indicates identifiers used for the Web Ontology Language.

H3 4. Identifiers in the RDF Namespace

- The W3C provide definitions terms
 - such as type, subclassOf, Class, inverseOf, and so forth
 - rdf : type
 - Property that provides an elementary typing system in RDF
 - Example

Table 3.9 Using `rdf:type` to Describe Playwrights

Subject	Predicate	Object
lit:Shakespeare	<code>rdf:type</code>	lit:Playwright
lit:Ibsen	<code>rdf:type</code>	lit:Playwright
lit:Simon	<code>rdf:type</code>	lit:Playwright
lit:Miller	<code>rdf:type</code>	lit:Playwright
lit:Marlowe	<code>rdf:type</code>	lit:Playwright
lit:Wilder	<code>rdf:type</code>	lit:Playwright

H3 5. Higher-order Relationships

- Limit
 - 'Shakespeare wrote Hamlet' -> O
 - Subject : Shakespeare
 - Predicate : wrote
 - Object : Hamlet
 - 'Shakespeare wrote Hamlet in 1604' -> X
 - Subject : Shakespeare
 - Predicate : wrote
 - Object : Hamlet
 - ???? : in 1604 ???
- Reification

Subject	Predicate	Object
<u>bio:n1</u>	<u>bio:author</u>	<u>lit:Shakespeare</u>
<u>bio:n1</u>	<u>bio:title</u>	<u>Hamlet</u>
<u>bio:n1</u>	<u>bio:publicationDate</u>	<u>1604</u>