RDFa
for structured data in HTML.

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Thanks to Anton Deik for helping me preparing this lecture

RDFa
for structured data in HTML

Part 1: Why RDFa

Part 2: RDFa Basics

Part 3: RDFa Tools

Part 4: Practical Session

Part 5: RDFa Project

Keywords: RDFa, Web 3.0, Semantic Web, Data Web, XHTML, Structured data, Search Engine Optimization, schema.org, Microformats, JOSN LD

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Motivation

- Bridges the gap between the Web of Documents and the Web of Data (Web 3.0).

- Makes web pages structured data (by embedding RDF triples inside HTML).
  - i.e., using RDFa we build small RDF graphs and embed them inside HTML pages.

Motivation

- As stated by Google Webmasters guide, RDFa can be roughly viewed as a way to label content to describe a specific type of information, such as a restaurant review, an event, a person, or a product listing.
- RDFa is heavily for declaring structured data inside webpages so that search engines can understand its content.
- Very important for search engine optimization

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RDFa Basics

- Each entity has a number of **properties**. For example, a Person has the properties name, address, job title, company, and email address.
- In general, RDFa uses simple attributes in HTML tags (often or) to assign brief and descriptive names to entities and properties.

RDFa by Example

Consider this HTML block:

```
<div>

  My name is George Mousa. My friends call me Geno. I live in
  Nablus, Palestine. I work as an engineer at Birzeit
  University.

</div>
```

Annotate the HTML block above with RDFa:

```
<div xmlns:v="http://rdf.data-vocabulary.org/#"
typeof="v:Person">

  My name is <span property="v:name"> George Mousa </span>.
  My friends call me <span property="v:nickname"> Geno </span>.
  I live in Nablus, Palestine.
  I work as an engineer at <span property="v:affiliation">
  Birzeit University </span>.

</div>
```

RDFa by Example

```
<div xmlns:v="http://rdf.data-vocabulary.org/#" typeof="v:Person”>
  My name is <span property="v:name"> George Mousa </span>.
  My friends call me <span property="v:nickname"> Geno </span>.
  I live in Nablus, Palestine.
  I work as an engineer at <span property="v:affiliation"> Birzeit University
  </span>.
</div>
```

- The example begins with a namespace declaration using xmlns. This indicates the namespace where the vocabulary is specified.
- Also on the first line, `typeof="v:Person"` indicates that the marked-up content represents a Person.
- Each property of the person (such as the name and nickname) is labeled using property.
- To indicate a URL, use **`rel`** instead of `property`. Consider adding the following to our example inside the Person div

```
My home page is: <a href="http://www.example.com"
rel="v:url"> www.example.com </a>.
```

- "**`rel`**" is used to convey the relationship between two entities—in this case, a Person entity and a webpage entity.

RDFa by Example

In our example, we are addressing information about George Mousa.

```
<div>  ... I live in Nablus, Palestine. I work as an engineer ... </div>
```

We use nesting. Nesting is when one information type includes the other.

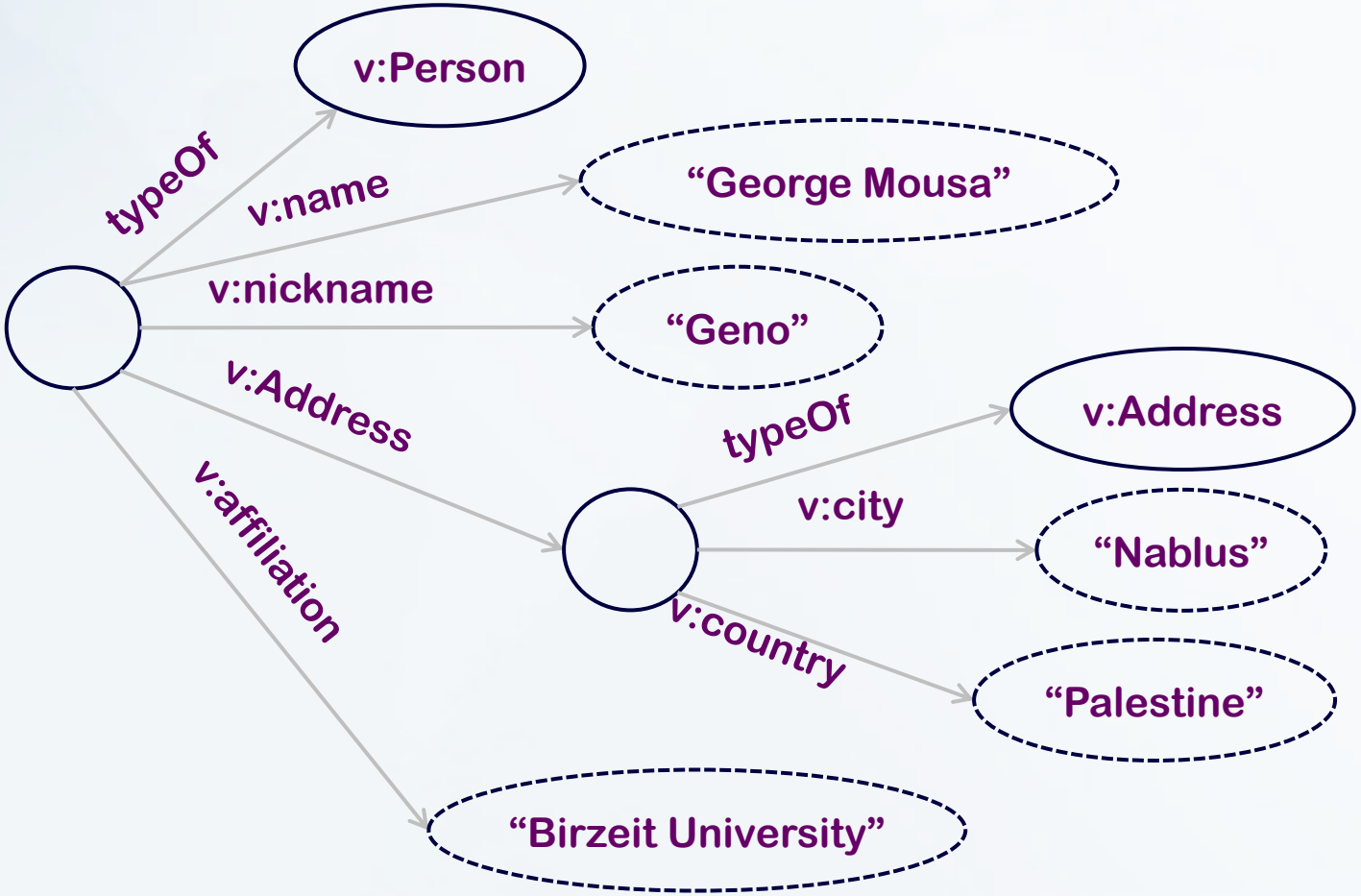
In this case, we want to include George's Address information (`typeof="v:Address"`) in the `typeof="v:Person"` entity.

Here, we use `rel` to indicate a relationship between George (the entity v:Person) and his address (the entity v:Address).

```
<div xmlns:v="http://rdf.data-vocabulary.org/#" typeof="v:Person">
My name is <span property="v:name"> George Mousa </span>.
My friends call me <span property="v:nickname"> Geno </span>.
I live in
<span rel="v:Address">
   <span typeof="v:Address">
      <span property="v:city">Nablus</span>,
      <span property="v:country">Palestine</span>
   </span>
</span>.
I work as an engineer at <span property="v:affiliation"> Birzeit University
</span>.
</div>
```

RDFa by Example

Let's draw a graph of our example!



RDFa Example (my publications page)

RDFa Example (my publications page)

Jobs.ps Use Case

Suppose webpages announcing job offers are written in RDFa, then www.jobs.ps can crawl this data automatically.

Page 1

Page n

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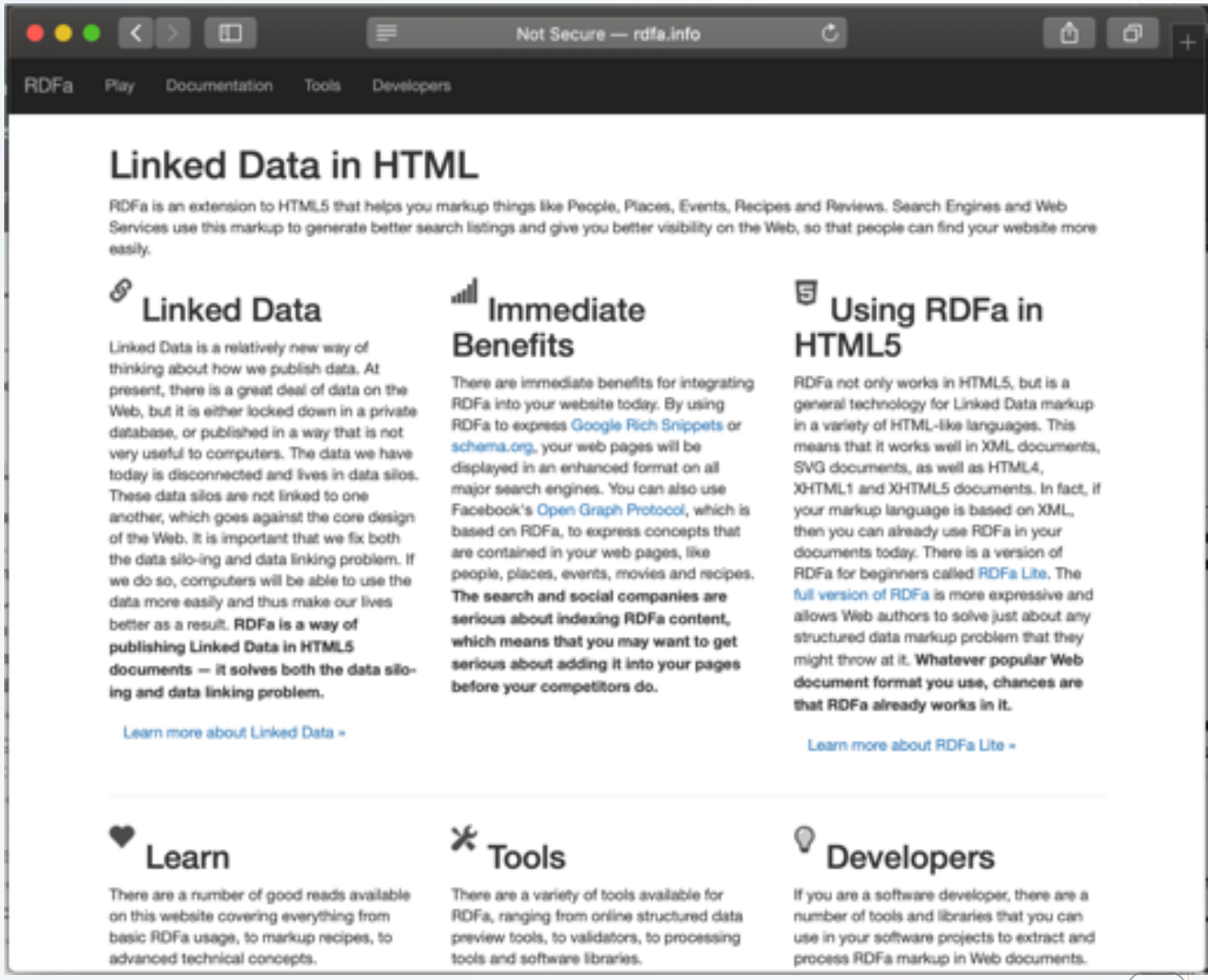
W3C RDFa Distiller

You may extract the RDFa from a website using this tool

RDFa Community Wiki

See more
- Tools
- Examples
- tutorials

http://rdfa.info



RDFa using Schema.org

Instead of using ontologies, many people currently the vocabularies provided by schema.org to write RDFa

See example 3 at https://schema.org/Person

```
An example of an order for multiple items, shipped separately.
ACME Supplies
Customer: Jane Doe
Order:
  Item abc123: 1 Widget: delivered 2015-03-10
  Item def456: 3 Widget accessories: shipped 2015-03-12
```

```
<div vocab="http://schema.org/" typeof="Order">
  <div property="seller" typeof="Organization">
    <b property="name">ACME Supplies</b>
  </div>
  <div property="customer" typeof="Person">
    <b property="name">Jane Doe</b>
  </div>
  <div property="orderedItem" typeof="OrderItem">
    Item number: <span property="orderItemNumber">abc123</span>
    <span property="orderQuantity">1</span>
    <div property="orderedItem" typeof="Product">
```

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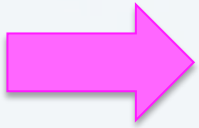

Part 4: Practical Session

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Description

Given two HTML files, people.html and projects.html, each student must embed both documents with RDFa. Consider the following when doing the exercise:

- Both documents are validated HTML documents. We have validated them using the standard W3C Validator: http://validator.w3.org/
- Students must use standard known ontologies when annotating the documents, such as FOAF, Dublin Core, etc.
- Students must validate their work using the standard W3C validator.
- Each student must expect to present and discuss his/her work at class.
- Final delivery must include links of the two RDFa-annotated documents.

Projects.html

Copy and Paste this code into Notepad++

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
<head>
<title>Sina Institute - Projects</title>
</head>
<body>
<div id="box" style="text-align: center;"><strong><span class="largeFontSpan">[ </span><a title="Projects" href="#Active-Projects"><span class="largeFontSpan">Active Projects</span></a> |  <a title="Past Projects" href="#Past-
Projects">
<span class="largeFontSpan">Past Projects</span><span style="color: #ffffff;"> </span></a><span class="largeFontSpan"> ]</span></strong></div>
<h1 id="Active-Projects">Active Projects</h1>
<table style="height: 786px;" width="475">
<tbody>
<tr>
<td><img class="alignleft size-full wp-image-350" title="PalGov " src="http://localhost/sina/wp-content/uploads/2011/02/eGovSeer.jpg" alt="GovSeer" width="132" height="100" /></td>
<td style="vertical-align: middle;"><strong>GovSeer - Interoperability of e-Governmental Services</strong>
Page:<span><a href="http://sites.birzeit.edu/comp/GovSeer/">http://sites.birzeit.edu/comp/GovSeer/</a></span></td>
</tr>
<tr>
<td><img class="alignleft size-full wp-image-350" title="PalGov " src="http://localhost/sina/wp-content/uploads/2011/08/palgove_logo_160x76.png" alt="The Palestinian e-government academy" width="132" /></td>
<td style="vertical-align: middle;"><strong>PalGov - e-Government Lifelong Learning Consortium</strong>
Page:<span><a href="http://sites.birzeit.edu/comp/PalGov/">http://sites.birzeit.edu/comp/PalGov/</a></span></td>
</tr>
<tr>
<td><img class="alignleft size-full wp-image-337" title="Arabic Ontololgy" src="http://localhost/sina/wp-content/uploads/2011/02/arabicOntologyLogoLowResolution.jpg" alt="Arabic Ontololgy" width="133" height="126" /></td>
<td style="vertical-align: middle;"><strong>Arabic Ontology
</strong>Page:<span><a href="http://sites.birzeit.edu/comp/ArabicOntology/">http://sites.birzeit.edu/comp/ArabicOntology/</a></span></td>
</tr>
<tr>
<td><img class="alignleft size-full wp-image-352" title="Wojood" src="http://localhost/sina/wp-content/uploads/2010/09/jood.png" alt="" width="125" height="97" /></td>
<td style="vertical-align: middle;"><strong> Wojood
</strong>Page: <a href="http://localhost/sina/wojood/" target="_blank">http://localhost/sina/wojood/</a></td>
</tr>
<tr>
<td><img class="alignleft size-full wp-image-352" title="google" src="http://localhost/sina/wp-content/uploads/2010/09/google1.png" alt="" width="125" height="97" /></td>
<td style="vertical-align: middle;"><strong>A Suite of Automated Tools for Efficient Management and Search in Web-based Arabic Documents
</strong>Page:<span><a href="http://localhost/sina/SATEMSAD/">http://localhost/sina/SATEMSAD/</a></span></td>
</tr>
<tr>
<td><img class="alignleft size-full wp-image-357" title="MashQL" src="http://localhost/sina/wp-content/uploads/2010/09/mashql2.png" alt="MashQL" width="140" height="64" /></td>
<td style="vertical-align: middle;"><strong>MashQL: A novel approach for querying the Data Web</strong>
Page:<span><a href="http://sites.birzeit.edu/comp/mashql/">http://sites.birzeit.edu/comp/mashql/</a></span></td>
</tr>
<tr>
<td><img class="alignleft size-full wp-image-355" title="Mobile Information Technology for the Visually Impaired " src="http://localhost/sina/wp-content/uploads/2010/09/mitvi.png" alt="mgad" width="136" height="73" /></td>
<td style="vertical-align: middle;"><strong>Mobile Information Technology for the Visually Impaired
</strong>Page:<span><a href="http://localhost/sina/MITVI/" target="_blank">http://localhost/sina/MITVI/</a></span></td>
</tr>
</tbody>
</table>
<br class="spacer" />
<h1 id="Past-Projects">Past Projects</h1>
<table style="height: 86px;" width="473">
<tbody>
<tr>
<td><img class="alignleft size-full wp-image-353" title="Mobile Information Technology for the Visually Impaired " src="http://localhost/sina/wp-content/uploads/2010/09/mgad.png" alt="mgad" width="133" height="62" /></td>
<td style="vertical-align: middle;"><strong>Model Generation for Selected Applications</strong>
Page:<span><a href="http://localhost/sina/ModelGeneration/" target="_blank">http://localhost/sina/ModelGeneration/</a></span></td>
</tr>
</tbody>
</table>
```

People.html

Copy and Paste this code into Notepad++

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
<head>
<title>Sina Institute - People</title>
</head>
<body>
<div id="box" style="text-align: center;"><strong><span class="largeFontSpan">[ </span><a title="Current Members" href="#Current"><span class="largeFontSpan">Current Members</span></a> |
<a title="Collaborators" href="#Collaborators"><span class="largeFontSpan">Collaborators</span></a> |  <a title="Former Members" href="#Former"><span class="largeFontSpan">Former Members</span></a>
<span class="largeFontSpan"> ]</span></strong></div>
<h1 id="Current">Current Members</h1>
<table style="height: 149px;" width="617">
<tbody>
<tr>
<td style="vertical-align: middle; width: 109px; height: 160px;"><img class="alignnone" title="Dr. Mustafa Jarrar" src="http://localhost/sina/wp-content/uploads/2011/02/Jarrar.png" alt="Dr. Mustafa Jarrar" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160"><strong>Dr. Mustafa Jarrar</strong>
<em>OnTo Group Director</em>
<a href="mailto:mjarrar@birzeit.edu">mjarrar@birzeit.edu </a>
<a href="http://localhost/sina/mjarrar/" target="_blank">localhost/sina/mjarrar/</a></td>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="alignnone" title="Dr. Adnan Yahya" src="http://localhost/sina/wp-content/uploads/2011/02/yahya.png" alt="Dr. Adnan Yahya" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160"><strong>Dr. Adnan Yahya</strong>
<em>ALTIR Group Director</em>
<a href="mailto:yahya@birzeit.edu">yahya@birzeit.edu </a>
<a href="http://localhost/sina/ayahya/" target="_blank">localhost/sina/ayahya/</a></td>
</tr>
</tbody>
</table>
<!-- ********************************************************** -->
<table style="height: 147px;" width="603">
<tbody>
<tr>
<td style="vertical-align: middle; width: 220px; height: 160px;"><strong>Secretary</strong>:
Rawan Taha
<a href="mailto:rntaha@birzeit.edu">rntaha@birzeit.edu </a>
Tel: +972 2 2982917</td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="130" height="160"></td>
<td style="vertical-align: middle; width: 130px; height: 160px;"></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160"></td>
</tr>
</tbody>
</table>
<!-- ********************************************** -->

<hr /><!-- ********************************************** -->
<table style="height: 149px;" width="617">
<tbody>
<tr>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="alignleft size-full wp-image-354" title="Majd Al-Ashhab" src="http://localhost/sina/wp-content/uploads/2011/02/DSC079601.png"
alt="Majd Al-Ashhab" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Majd Al-Ashhab
<a href="mailto:mashhab@birzeit.edu">mashhab@birzeit.edu </a>
<a href="http://localhost/sina/mashhab/">localhost/sina/mashhab/</a></td>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="alignnone" title="Ali Salhi" src="http://localhost/sina/wp-content/uploads/2011/02/a11.png" alt="Ali Salhi" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Ali Salhi
<a href="mailto:asalhi@birzeit.edu">asalhi@birzeit.edu</a>
<a href="http://localhost/sina/asalhi/">localhost/sina/asalhi/</a></td>
</tr>
</tbody>
</table>
```

People.html – continued

Copy and Paste this code into Notepad++

```
<!-- ********************************************************** -->
<table style="height: 149px;" width="617">
<tbody>
<tr>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="alignleft size-full wp-image-1124" title="antonPhoto" src="http://localhost/sina/wp-content/uploads/2011/02/antonPhoto.png" alt="" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Anton Deik
<a href="mailto:anton.deik@gmail.com">anton.deik@gmail.com</a>
<a href="http://localhost/sina/adeik/">localhost/sina/adeik/</a></td>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="alignnone" title="Bilal Farraj" src="http://localhost/sina/wp-content/uploads/2011/02/STB9565.png" alt="Bilal Farraj" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Bilal Farraj
<a href="mailto:bfarraj@gmail.com">bfarraj@gmail.com </a>
<a href="http://localhost/sina/bfarraj/">localhost/sina/bfarraj/</a></td>
</tr>
</tbody>
</table>
<!-- ********************************************************** -->
<table style="height: 149px;" width="617">
<tbody>
<tr>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img title="Ala' Hawash" src="../wp-content/uploads/2011/02/Ala.png" alt="Ala' Hawash" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Ala' Hawash
<a href="mailto:ala.hawash@gmail.com">ala.hawash@gmail.com</a>
<a href="http://localhost/sina/ahawash/">localhost/sina/ahawash/</a></td>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="alignnone" title="Rana Rishmawi" src="http://localhost/sina/wp-content/uploads/2011/03/Rana.png" alt="Rana Rishmawi" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Rana Rishmawi
<a href="mailto:rgr.4.12@gmail.com">rgr.4.12@gmail.com </a>
<a href="http://localhost/sina/rrishmawi/">localhost/sina/rrishmawi/</a></td>
</tr>
</tbody>
</table>
<table style="height: 149px;" width="617">
<tbody>
<tr>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="size-full wp-image-601 alignleft" title="Hiba Shaheen" src="http://localhost/sina/wp-content/uploads/2011/02/HibaShaheen.png" alt="" width="105"
height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Hiba Shaheen
<a href="mailto:shaheen.hiba@gmail.com ">shaheen.hiba@gmail.com </a>
<a href="http://localhost/sina/hshaheen/">localhost/sina/hshaheen/</a></td>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="alignnone" title="Rami Khaleel" src="../wp-content/uploads/2011/02/rami_khaleel.png" alt="Rami Khaleel" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Rami Khaleel
<a href="mailto:ramikhl@yahoo.com">ramikhl@yahoo.com </a>
<a href="http://localhost/sina/rkhaleel/">localhost/sina/rkhaleel/</a></td>
</tr>
</tbody>
</table>
<!-- **************************************************-->
<table style="height: 149px;" width="617">
<tbody>
<tr>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img title="Mohammed Melhem" src="http://localhost/sina/wp-content/uploads/2011/02/melhem.png" alt="Mohammed Melhem" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Mohammed Melhem
<a href="mailto:4mmelhem@gmail.com"> 4mmelhem@gmail.com </a>
<a href="http://localhost/sina/mmelhem/" target="_blank">localhost/sina/mmelhem/</a></td>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img class="alignnone" title="Hanya Radwan" src="http://localhost/sina/wp-content/uploads/2011/02/hanya.png" alt="Hanya Radwan" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Hanya Radwan
<a href="mailto:hanya.radwan2010@gmail.com">hanya.radwan2010@gmail.com </a>
<a href="http://localhost/sina/hradwan/">localhost/sina/hradwan/</a></td>
</tr>
</tbody>
</table>
<!-- **************************************************-->
```

People.html – continued

Copy and Paste this code into Notepad++

```
<table style="height: 149px;" width="617">
<tbody>
<tr>
<td style="vertical-align: middle; width: 130px; height: 160px;"><img title="Nafiz Qasim" src="http://localhost/sina/wp-
content/uploads/2011/02/nafiz.png" alt="Nafiz Qasim" width="105" height="125" /></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160">Nafiz Qasim
<a href="mailto:nafizqasim@gmail.com">nafizqasim@gmail.com </a>
<a href="http://localhost/sina/nqasim/">localhost/sina/nqasim/</a></td>
<td style="vertical-align: middle; width: 130px; height: 160px;"></td>
<td style="text-align: left; margin: 0px 0px 0px 0px; vertical-align: middle;" width="220" height="160"></td>
</tr>
</tbody>
</table>
<!-- ********************************************************************** ********************************************************************************** -->
<br class="spacer" />
<h1 id="Collaborators">Collaborators</h1>
<ul>
                <li><a href="mailto:wfasha@birzeit.edu">Wasim Abu Fasha</a></li>
                <li><a href="mailto:lshamieh@birzeit.edu ">Luna Shamieh</a></li>
                <li><a href="mailto:jamal@birzeit.edu">Jamal Daher</a></li>
</ul>
<br class="spacer" />
<h1 id="Former">Former Members</h1>
<ul>
                <li><a href="mailto:samara.1050074@gmail.com">Hamam Samara</a></li>
                <li><a href="mailto:smr.ayesh@gmail.com">Samar Aish</a></li>
                <li><a href="mailto:mrbadaw@gmail.com">Muath Badawi</a></li>
</ul>
</body>
</html>
```

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for structured data in HTML

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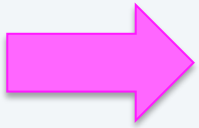
Part 3: RDFa Tools

Part 4: Practical Session



Part 5: RDFa Project

Keywords: RDFa, Web 3.0, Semantic Web, Data Web, XHTML, Structured data, Search Engine Optimization, schema.org, Microformats, JOSN LD

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Project Description

Goal: Train students on how how to build a web page using RDFa

Project description:

- Each student should a create a personal web page for him/her self using RDFa. The page should contain the following sections at least:
- Personal info such as photo, name, email, phone, address, affiliation, etc.
- Academic section, which should include at least one mark sheet.
- Each students should use his/her ontology (and more ontologies if needed) to annotate his/her web page.
- The more data elements in the page are annotated the better he mark will be. The better the generated RDF structure the better the mark will be. Students should use the W3C RDFa distiller to distil the RDF graph.

Deliverables: Each student will deliver report that contains the following: 1) A screenshot of his/her web page. 2) The source code of his web page, 3) a screen shot of the distilled RDF data (graph only). 4) each student will be asked to present his/her page and explain his/her RDFa tags.

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