

How I built the NASA Facilities Data Set

The screenshot shows a Mozilla Firefox browser window displaying the LodLive application. The address bar shows the URL: `data.thespaceplan.com/LodLive2/app_en.html?http://investors.ddns.net:8080/marmotta/ldp/N/`. The main content area features a network diagram with a central node labeled "NASA Facilities" (green circle) and several peripheral nodes (purple circles) representing specific NASA facilities. The nodes are connected by arrows labeled "contains".

The nodes in the diagram are:

- NASA Aircraft Management Division (green circle)
- Langley Research Center (purple circle)
- Armstrong Flight Research Center (purple circle)
- Goddard Space Flight Center (purple circle)
- Johnson Space Center (purple circle)
- Wallops Flight Facility/GSFC (purple circle)

The diagram illustrates the hierarchical structure of NASA facilities, with "NASA Facilities" at the top level and the other facilities as sub-nodes. Each node includes a gear icon and a list icon, suggesting interactive capabilities. The browser's taskbar at the bottom shows several open applications, including "LodLive - browsing the We...", "Untitled 1 - LibreOffice Im...", and two terminal windows.

Accessed at:

http://data.thespaceplan.com/LodLive2/app_en.html?

<http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities>

Go to data.nasa.gov and retrieve the NASA Facilities dataset

The screenshot shows a web browser window displaying the NASA Data Portal. The page title is "NASA Facilities | NASA | Open Data - Mozilla Firefox". The URL in the address bar is "https://data.nasa.gov/Management-Operations/NASA-Facilities/gvk9-iz74". The page features a header with "Welcome To NASA'S DATA PORTAL" and a navigation menu with links for Home, About, Data Catalog, Developer Resources, and Suggest a Dataset. Below the header, there is a search bar and a table of NASA Facilities. The table has columns for Center, Center Search Status, Facility, and FacilityURL. The table lists 9 facilities, all from the Ames Research Center, with various facility names and URLs.

Most Visited Getting Started Reload current page

Welcome To NASA'S DATA PORTAL

This site is a continually growing catalog of publicly Available NASA Datasets, APIs, Visualizations, and More.

Sign Up Sign In

NASA Home About Data Catalog Developer Resources Suggest a Dataset

NASA Facilities (No description provided)

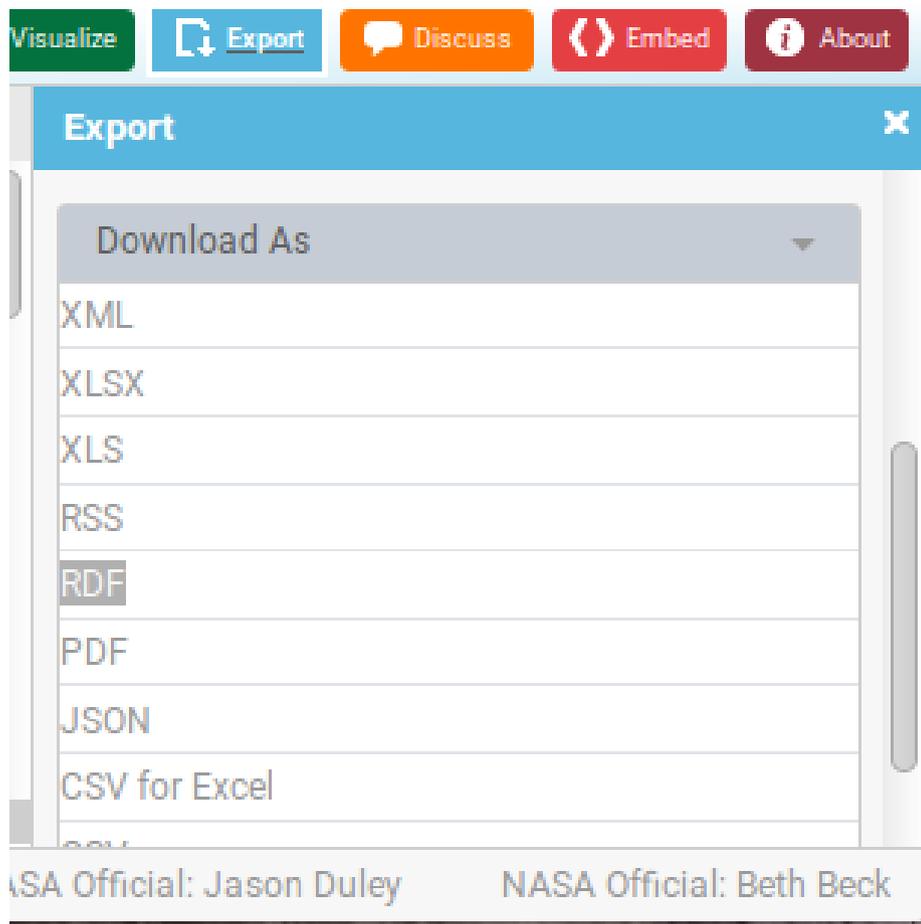
Manage More Views Filter Visualize Export Discuss Embed About

Center	Center Search Status	Facility	FacilityURL
1 Ames Research Center	Public	046 - AIRCRAFT MAINTENANCE HAN	#NAME?
2 Ames Research Center	Public	DYNAVAC THERMAL VACUUM CHAM	#NAME?
3 Ames Research Center	Public	N204A - SPACE TECHNOLOGY BUILD	#NAME?
4 Ames Research Center	Public	N206A - 12 FOOT PRESSURE WIND T	#NAME?
5 Ames Research Center	Public	N229 - EXPER. AEROTHERMODYNAM	#NAME?
6 Ames Research Center	Public	N234 - THERMAL PROTECTION LAB:	#NAME?
7 Ames Research Center	Public	N234 - THERMAL PROTECTION LAB:	#NAME?
8 Ames Research Center	Public	N234A - THERMAL PROTECTION LAB	#NAME?
9 Ames Research Center	Public	N237 - HYPERVELOCITY FREE FLIGH	#NAME?

Site Feedback Privacy Policy and Important Notices NASA Official: Jason Duley NASA Official: Beth Beck

NASA Facilities | NASA | O... *(Untitled) Untitled 1 - LibreOffice Im... Terminal - root@brent-Ins... Terminal - get-post.php (~... Terminal - brent@brent-In...

Download the file and save as rows.rdf



rows.rdf

```
<rdf:RDF xmlns:rdf="http://www.w3.org/2003/01/geo/wgs84_pos#" xmlns:socrata="http://www.socrata.com/standards.github.com/2012/01/open-data" xmlns:dsbase="http://data.nasa.gov/rdf#" xmlns:www="http://www.w3.org/2000/10/swap/pim/usps#">
  <dsbase:gvk9-iz74 rdf:about="http://www.socrata.com/standards.github.com/2012/01/open-data" >
    <socrata:rowID>1</socrata:rowID>
    <rdfs:member rdf:resource="http://www.socrata.com/standards.github.com/2012/01/open-data" >
      <ds:center>Ames Research Center</ds:center>
      <ds:center_search_status>Public</ds:center_search_status>
      <ds:facility>046 - AIRCRAFT MAIN</ds:facility>
      <ds:occupied>1943-01-01T00:00:00</ds:occupied>
      <ds:status>Active</ds:status>
      <ds:record_date>2011-10-05T00:00:00</ds:record_date>
      <ds:last_update>2014-09-10T00:00:00</ds:last_update>
      <ds:country>US</ds:country>
      <ds:contact>Rocci Caringello</ds:contact>
      <ds:phone>650 603-9506</ds:phone>
      <ds:location><geo:SpatialThing>
```

Convert the file to a different serialization of RDF

- Choose RDF/XML to Turtle
- With the tool <http://www.l3s.de/~minack/rdf2rdf/>
- `java -jar rdf2rdf-1.0.1-2.3.1.jar rows.rdf rows.ttl`

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" xmlns:dcat="http://www.w3.org/ns/dcat#" xmlns:ods="http://open-data-standards.github.com/2012/01/open-data-standards.org/2000/10/swap/pim/usps#" xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:dsbase="http://data.nasa.gov/resource/gvk9-iz74" dsbase:gvk9-iz74 rdf:about="http://data.nasa.gov/resource/gvk9-iz74/1">
  <socrata:rowID>1</socrata:rowID>
  <rdfs:member rdf:resource="http://data.nasa.gov/resource/gvk9-iz74/1">
    <ds:center>Ames Research Center</ds:center>
    <ds:center_search_status>Public</ds:center_search_status>
    <ds:facility>046 - AIRCRAFT MAINTENANCE HANGAR 2</ds:facility>
    <ds:occupied>1943-01-01T00:00:00</ds:occupied>
    <ds:status>Active</ds:status>
    <ds:record_date>2011-10-05T00:00:00</ds:record_date>
    <ds:last_update>2014-09-10T00:00:00</ds:last_update>
    <ds:country>US</ds:country>
    <ds:contact>Rocci Caringello</ds:contact>
    <ds:phone>650 603-9506</ds:phone>
    <ds:location><geo:SpatialThing>
      <usps:deliveryAddress></usps:deliveryAddress>
      <usps:cityName></usps:cityName>
      <geo:lat>37.41412</geo:lat>
      <geo:long>-122.052585</geo:long>
      <usps:stateAbbr></usps:stateAbbr>
      <usps:zipCode>94035</usps:zipCode></geo:SpatialThing></ds:location>
    <ds:city>Moffett Field</ds:city>
    <ds:state>CA</ds:state>
    <ds:zipcode>94035</ds:zipcode></dsbase:gvk9-iz74>
```

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix socrata: <http://www.socrata.com/rdf/terms#> .
@prefix dcat: <http://www.w3.org/ns/dcat#> .
@prefix ods: <http://open-data-standards.github.com/2012/01/open-data-standards.org/2000/10/swap/pim/usps#> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix geo: <http://www.w3.org/2003/01/geo/wgs84_pos#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix dsbase: <http://data.nasa.gov/resource/> .
@prefix ds: <http://data.nasa.gov/resource/gvk9-iz74/> .
@prefix usps: <http://www.w3.org/2000/10/swap/pim/usps#> .

<http://data.nasa.gov/resource/gvk9-iz74/1> a dsbase:gvk9-iz74 ;
  socrata:rowID "1" ;
  rdfs:member dsbase:gvk9-iz74 ;
  ds:center "Ames Research Center" ;
  ds:center_search_status "Public" ;
  ds:facility "046 - AIRCRAFT MAINTENANCE HANGAR 2" ;
  ds:occupied "1943-01-01T00:00:00" ;
  ds:status "Active" ;
  ds:record_date "2011-10-05T00:00:00" ;
  ds:last_update "2014-09-10T00:00:00" ;
  ds:country "US" ;
  ds:contact "Rocci Caringello" ;
  ds:phone "650 603-9506" ;
  ds:location _:node1ae5ejru5x1 .
```

Remove the Local NASA Namespace from the RDF file

- Convert strings that look like
<http://data.nasa.gov/resource/gvk9-iz74/1>,
<http://data.nasa.gov/resource/gvk9-iz74/2> ,
<http://data.nasa.gov/resource/gvk9-iz74/n>
• To <#1>, <#2> , <#n> (where n is any number)
- ./nasafacilities\$ cat rows.ttl | sed
's/http://data.nasa.gov/resource/gvk9-iz74/#/g'
- Add a step to remove the local base for the rdf file
- ./nasafacilities\$ cat rows.ttl | sed
's/http://data.nasa.gov/resource/gvk9-iz74/#/g'| sed 's/absbase:gvk9-iz74 ;//g'
-

Remove the Local NASA Namespace from the RDF file (continued)

- Add a step to remove the local base reference for the rdf triples:
- `./nasafacilities$ cat rows.ttl | sed 's/http:\\\\data\\.nasa\\.gov\\resource\\gvk9-iz74\\/#/g' | sed 's/a dsbase:gvk9-iz74 ;//g'`

```
usps:zipCode "94035" .
<#1> ds:city "Moffett Field" ;
    ds:state "CA" ;
    ds:zipcode "94035" .
<#2> a dsbase:gvk9-iz74 ;
    socrata:rowID "2" ;
    rdfs:member dsbase:gvk9-iz74 ;
    ds:center "Ames Research Center" ;
    ds:center_search_status "Public" ;
    ds:facility "DYNAVAC THERMAL VACUUM CHAMBER" ;
    ds:occupied "2010-01-01T00:00:00" ;
    ds:status "Active" ;
    foaf:document <http://www.nasa.gov/centers/ames/research/technology-onep
agers/eng_eval_lab.html> ;
    ds:record_date "2014-10-29T00:00:00" ;
    ds:last_update "2014-10-29T00:00:00" ;
    ds:country "US" ;
    ds:contact "Rocci Caringello" ;
    ds:phone "650 603-9506" ;
    ds:location _:node1ae5ejru5x2 .
```

```
usps:stateAbbr "" ;
usps:zipCode "94035" .
<#1> ds:city "Moffett Field" ;
    ds:state "CA" ;
    ds:zipcode "94035" .
<#2>
    socrata:rowID "2" ;
    rdfs:member dsbase:gvk9-iz74 ;
    ds:center "Ames Research Center" ;
    ds:center_search_status "Public" ;
    ds:facility "DYNAVAC THERMAL VACUUM CHAMBER" ;
    ds:occupied "2010-01-01T00:00:00" ;
    ds:status "Active" ;
    foaf:document <http://www.nasa.gov/centers/ames/research/technology-onep
agers/eng_eval_lab.html> ;
    ds:record_date "2014-10-29T00:00:00" ;
    ds:last_update "2014-10-29T00:00:00" ;
    ds:country "US" ;
    ds:contact "Rocci Caringello" ;
    ds:phone "650 603-9506" ;
    ds:location _:node1ae5ejru5x2 .
```

Construct the Turtle Files to Add to Marmotta

- Start out with Ames Research Center. Create a file called `amesresearchcenterfacilities.txt` with the contents:

```
brent@brent-Inspiron-1525:~/Documents/nasafacilities$ cat amesresearchcenterfacilities.txt
1
2
3
4
5
6
7
8
9
10
11
12
```

Create the first part of the the Turtle file to upload to Marmotta for Ames

- Use the script:

<https://github.com/bshambaugh/nasafacilities/blob/master/findfacilties-matchregex.js>

with the input: rows.nt and amesresearchcenterfacilities.txt (rows.nt from rdf2rdf)

Also set var nasacenter = 'Ames Research Center'; (or any other center you would want)

```
brent@brent-Inspiron-1525:~/Documents/nasafacilities-ames$ /opt/node-v4.4.5-linux-x64/bin/node findfacilties-matchregex.js
amesresearchcenterfacilities-processed.txt
<> a ds:center ;
dc:title 'Ames Research Center' ;
ds:facility <#1> ;
ds:facility <#2> ;
ds:facility <#3> ;
ds:facility <#4> ;
ds:facility <#5> ;
ds:facility <#6> ;
ds:facility <#7> ;
ds:facility <#8> ;
ds:facility <#9> ;
ds:facility <#10> ;
ds:facility <#11> ;
ds:facility <#12> .

<#1> dc:title '046 - AIRCRAFT MAINTENANCE HANGAR 2' ;
owl:sameAs ds:1 .
ds:1 a dsbase:gvk9-iz74 .

<#2> dc:title 'DYNAVAC THERMAL VACUUM CHAMBER' ;
owl:sameAs ds:2 .
ds:2 a dsbase:gvk9-iz74 .

<#3> dc:title 'N204A - SPACE TECHNOLOGY BUILDING: AMES VERTICAL GUN RANGE (PAPAC)' ;
owl:sameAs ds:3 .
ds:3 a dsbase:gvk9-iz74 .
```

Take the the Ames Research Center part of output from “Remove the Local NASA Namespace from the RDF file” presented earlier and add to output from the previous slide and save with a .ttl extension (remember prefixes)

```
@prefix dsbase: <http://data.nasa.gov/resource/> .
@prefix ds: <http://data.nasa.gov/resource/gvk9-iz74/> .
@prefix dc: <http://purl.org/dc/terms/> .
@prefix usps: <http://www.w3.org/2000/10/swap/pim/usps#> .
@prefix geo: <http://www.w3.org/2003/01/geo/wgs84_pos#> .
@prefix socrata: <http://www.socrata.com/rdf/terms#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .

<> a ds:center ;
dc:title 'Ames Research Center' ;
ds:facility <#1> .

<#1> dc:title '046 - AIRCRAFT MAINTENANCE HANGAR 2' ;
owl:sameAs ds:1 .
ds:1 a dsbase:gvk9-iz74 .|

<#1>
    socrata:rowID "1" ;
    rdfs:member dsbase:gvk9-iz74 ;
    ds:center "Ames Research Center" ;
    ds:center_search_status "Public" ;
    ds:facility "046 - AIRCRAFT MAINTENANCE HANGAR 2" ;
    ds:occupied "1943-01-01T00:00:00" ;
    ds:status "Active" ;
    ds:record_date "2011-10-05T00:00:00" ;
    ds:last_update "2014-09-10T00:00:00" ;
    ds:country "US" ;
    ds:contact "Rocci Caringello" ;
    ds:phone "650 603-9506" ;
    ds:location _:node1ae5ejru5x1 .

_:node1ae5ejru5x1 a geo:SpatialThing ;
    usps:deliveryAddress "" ;
    usps:cityName "" ;
    geo:lat "37.41412" ;
    geo:long "-122.052585" ;
    usps:stateAbbr "" ;
    usps:zipCode "94035" .

<#1> ds:city "Moffett Field" ;
    ds:state "CA" ;
    ds:zipcode "94035" .
```

Repeat this for Every Facility

```
brent@brent-Inspiron-1525:~/nasa-facilities$ ls  
amesresearchcenterfacilities-processed-comb.ttl  
armstrongflightresearchcenterfacilities-processed-comb.ttl  
faciltiestitle.ttl  
glennresearchcenterfacilities-processed-comb.ttl  
goddardspaceflightcenterfacilities-processed-comb.ttl  
jetpropulsionlabfacilities-processed-comb.ttl  
johnsonspacecenterfacilities-processed-comb.ttl  
kennedyspacecenterfacilities-processed-comb.ttl  
langleyresearchcenterfacilities-processed-comb.ttl  
marshallspaceflightcenterfacilities-processed-comb.ttl  
michoudassemblyfacilityfacilities-processed-comb.ttl  
NASAaircraftmanagementdivisionfacilities-processed-comb.ttl  
stennispacecenterfacilities-processed-comb.ttl  
wallopsflightfacilitygsfcfacilities-processed-comb.ttl
```

Create the Parent Container on Marmotta

- `curl -u username:password -iX POST -H "Content-Type: text/turtle" -H "Slug: NASA-Facilities" http://investors.ddns.net:8080/marmotta/ldp`

Create Labeling for the Parent Container

- First get the E-Tag with HTTP GET

```
curl -i -H "Accept: text/turtle" http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities
HTTP/1.1 200 OK
Server: Apache Marmotta/3.3.0 (build 2+)
Accept-Patch: application/rdf-patch
Accept-Post: text/turtle, application/ld+json, application/rdf+xml, text/n3, text/plain, */*
Allow: POST, PATCH, GET, OPTIONS, PUT, HEAD
ETag: W/"1465353625000"
Last-Modified: Wed, 08 Jun 2016 02:40:25 GMT
Link: <http://wiki.apache.org/marmotta/LDPIImplementationReport/2014-09-16>; rel="http://www.w3.org/ns/ldp#constrainedBy"
Link: <http://www.w3.org/ns/ldp#Resource>; rel="type"
Link: <http://www.w3.org/ns/ldp#RDFSsource>; rel="type"
Link: <http://www.w3.org/ns/ldp#Container>; rel="type"
Link: <http://www.w3.org/ns/ldp#BasicContainer>; rel="type"
Content-Type: text/turtle
Transfer-Encoding: chunked
Date: Wed, 08 Jun 2016 21:00:27 GMT

@prefix ldp: <http://www.w3.org/ns/ldp#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix parent: <http://investors.ddns.net:8080/marmotta/ldp/> .
@prefix child: <http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities/> .
@prefix this: <http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities#> .

parent:NASA-Facilities a ldp:Resource , ldp:RDFSsource ;
    ldp:interactionModel ldp:Container ;
    a ldp:Container , ldp:BasicContainer ;
    dcterms:created "2016-06-07T22:40:25.000-04:00"^^xsd:dateTime ;
    dcterms:modified "2016-06-07T22:40:25.000-04:00"^^xsd:dateTime .
```

Create Labeling for the Parent Container (continued)

- Create a turtle file for the labelling:

```
brent@brent-Inspiron-1525:~/nasa-facilities$ cat faciltiestitle.ttl
@prefix dc: <http://purl.org/dc/terms/> .
<> dc:title 'NASA Facilities' .
```

Create Labeling for the Parent Container (continued)

- Do a HTTP PUT with the E-Tag from the HTTP GET

```
curl -u username:password -iX PUT -H "Content-Type: text/turtle" --data @./faciltiestitle.ttl \
-H 'If-Match: W/"1465353625000"' http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities
HTTP/1.1 200 OK
Server: Apache Marmotta/3.3.0 (build 2+)
ETag: W/"1465419709000"
Last-Modified: Wed, 08 Jun 2016 21:01:49 GMT
Link: <http://wiki.apache.org/marmotta/LDPIImplementationReport/2014-09-16>; rel="http://www.w3.org/ns/ldp#constrainedBy"
Link: <http://www.w3.org/ns/ldp#Resource>; rel="type"
Link: <http://www.w3.org/ns/ldp#RDFSsource>; rel="type"
Link: <http://www.w3.org/ns/ldp#Container>; rel="type"
Link: <http://www.w3.org/ns/ldp#BasicContainer>; rel="type"
Content-Length: 0
Date: Wed, 08 Jun 2016 21:01:49 GMT|
```

Create and Add Content to Each Facility Container like you did for the Parent

```
curl -u username:password -iX POST -H "Content-Type: text/turtle" -H "Slug: Ames-Research-Center" http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities
```

```
curl -i -H "Accept: text/turtle" http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities/Ames-Research-Center
```

Selected from response: W/"1465424433000" (Also use ETag from POST)

```
curl -u username:password -iX PUT -H "Content-Type: text/turtle" --data @./amesresearchcenterfacilities-processed-comb.ttl \
-H 'If-Match: W/"1465424433000"' http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities/Ames-Research-Center
```

Create and Add Content to Each Facility Container like you did for the Parent

```
curl -u username:password -iX POST -H "Content-Type: text/turtle" -H "Slug: Ames-Research-Center" http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities
```

```
curl -i -H "Accept: text/turtle" http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities/Ames-Research-Center
```

Selected from response: W/"1465424433000" (Also use ETag from POST)

```
curl -u username:password -iX PUT -H "Content-Type: text/turtle" --data @./amesresearchcenterfacilities-processed-comb.ttl \
-H 'If-Match: W/"1465424433000"' http://investors.ddns.net:8080/marmotta/ldp/NASA-Facilities/Ames-Research-Center
```

Configure LodLive for the Marmotta Endpoint

- Clone a copy of LodLive:

<https://github.com/dvcama/LodLive>

- Use a custom LodLive profile:

<https://github.com/bshambaugh/customLodliveProfiles/blob/master/lodlive.profile.js>

replace localhost with investors.ddns.net

- Extra Sides Following

Select the First 12 Facilities for AMES Research Center

- Run the code <https://github.com/bshambaugh/nasafacilities/blob/master/matchregex.js> using node matchregex.js
- Manually specify the facilities you want to select with the array labeled K, and get the output:

```
<> a ds:center ;
dc:title 'Ames Research Center';
ds:facility <#1>;
ds:facility <#2>;
ds:facility <#3>;
ds:facility <#4>;
ds:facility <#5>;
ds:facility <#6>;
ds:facility <#7>;
ds:facility <#8>;
ds:facility <#9>;
ds:facility <#10>;
ds:facility <#11>;
ds:facility <#12>.

<#1> dc:title '046 - AIRCRAFT MAINTENANCE HANGAR 2';
owl:sameAs ds:1;
ds:1 a dsbase:gvk9-iz74.

<#2> dc:title 'DYNAVAC THERMAL VACUUM CHAMBER';
owl:sameAs ds:2;
ds:2 a dsbase:gvk9-iz74.

<#3> dc:title 'N204A - SPACE TECHNOLOGY BUILDING: AMES VERTICAL GUN RANGE (PAPAC)';
owl:sameAs ds:3;
ds:3 a dsbase:gvk9-iz74.
```

...