

Using SAS and Web Services for Obtaining Book Information from Amazon



EOM Data Solutions BV
Bart Heinsius, Berry Heerschop
March 30, 2009

EOM Data Solutions BV
PJ Oudweg 11
1314 CH Almere
The Netherlands
t: +31 (0)36 548 39 50
e: info@eom.nl
l: <http://www.eom.nl>

Create an Amazon Web Services (AWS) account at <http://aws.amazon.com/>
This will give you an Access Key ID.

To access the web service, sign up for the *Amazon Associates Web Service* at <http://www.amazon.com/E-Commerce-Service-AWS-home-page/b?ie=UTF8&node=12738641>
Please note that the usage guidelines for this service say:

"You may use the data in the Amazon Associates Web Service as long as it's used primarily to drive traffic back to Amazon's web sites or sales of Amazon products and services."

You will receive an Associate ID by email.

Now you can access the web service through the following url:

[http://ecs.amazonaws.com/onca/xml?Service=AWSECommerceService&Operation=ItemSearch&AWSAccessKeyId=\[Access Key ID\]&AssociateTag=\[ID\]&SearchIndex=Books&Keywords=Potter](http://ecs.amazonaws.com/onca/xml?Service=AWSECommerceService&Operation=ItemSearch&AWSAccessKeyId=[Access Key ID]&AssociateTag=[ID]&SearchIndex=Books&Keywords=Potter)

At the [Access Key ID] parameter you have to fill in your own access key ID and it's optional to fill in [ID] for your Associate Tag.

This can be used in SAS as follows:

```
filename amazon url "http://ecs.amazonaws.com/onca/xml?
Service=AWSECommerceService&
AWSAccessKeyId= [Access Key ID]&
Operation=ItemLookup&
ItemId=B000080E6I&
IdType=ASIN&"
lrecl=2000
recfm=S
;

data _null_ ;
  infile amazon truncover;
  input;
  put _infile_;
run;
```

Example

Running the SAS code above with the following url:

```
http://ecs.amazonaws.com/onca/xml?
Service=AWSECommerceService&
AWSAccessKeyId=[Access Key ID]&
Operation=ItemLookup&
ItemId=B000080E6I&
IdType=ASIN&
```



Gives the following (partial) result in the SAS log:

```
<?xml version="1.0" encoding="UTF-8"?><ItemLookupResponse xmlns="http://webservices.amazon.com/AWS
ECommerceService/2005-10-05"><OperationRequest><HTTPHeaders><Header Name="UserAgent" Value="SAS/UR
L"></Header></HTTPHeaders><RequestId>1DHVN5QG6THHDPF30FBE</RequestId><Arguments><Argument Name="It
emId" Value="B000080E6I"></Argument><Argument Name="Service" Value="AWSECommerceService"></Argumen
t><Argument Name="Operation" Value="ItemLookup"></Argument><Argument Name="IdType" Value="ASIN"></
Argument><Argument Name="AWSAccessKeyId" Value="[Access Key ID]"></Argument></Arguments><Requ
estProcessingTime>0.022636890411377</RequestProcessingTime><OperationRequest><Items><Request><IsV
alid>True</IsValid><ItemLookupRequest><IdType>ASIN</IdType><ItemId>B000080E6I</ItemId></ItemLookup
Request></Request><Item><ASIN>B000080E6I</ASIN><DetailPageURL>http://www.amazon.com/Canon-PowerSho
t-S400-Digital-Optical/dp/B000080E6I%3FSubscriptionId%3D1GBZGW3PGJGP49XVN482%26tag%3Dws%26linkCode
%3Dxm2%26camp%3D2025%26creative%3D165953%26creativeASIN%3DB000080E6I</DetailPageURL><ItemAttribute
s><Manufacturer>Canon</Manufacturer><ProductGroup>Photography</ProductGroup><Title>Canon PowerShot
S400 4MP Digital Camera w/ 3x Optical Zoom</Title></ItemAttributes></Item></Items></ItemLookupRes
ponse>
```

Creating a SAS dataset with Book Information from the Amazon Web Service Query

In the preceding example we have shown how to put information from an Amazon Web Service Query in the SAS log. The Amazon Web Service Query provides the opportunity to display specific result pages (e.g. page 1, page 2, page 10, etc.) from the query but unfortunately the output from the query only gives 10 results per page.

We have adapted the previous SAS program so that SAS creates one dataset with all the results of the query with a maximum of 400 pages (=4000 results). This limit has been set by the Amazon Web Service.

This can be used in SAS as follows:

```
data amazon_web;
  length filenamereference $9;
  length amazonurl $300;

  do i=1 to 400;
    filenamereference="amaz"||strip(put(i,3.));

amazonurl="http://ecs.amazonaws.com/onca/xml?
Service=AWSECommerceService&Operation=ItemSearch&ItemPage="||strip(put(i,3.))||
"&AWSAccessKeyId=[Access Key ID]&AssociateTag=cecece-
20&SearchIndex=Books&ResponseGroup=Small&Keywords=Base%20SAS%20Programming";

    rc = filename(filenamereference,amazonurl,"URL") ;

    output;
  end;
```



```
run;
filename map "%sysfunc(pathname(work))/amazon.map";
data _null_;
input;
file map;
put _infile_;
cards4;
```

```
<?xml version="1.0" encoding="windows-1252"?>
```

```
<!-- ##### -->
<!-- 2009-03-16T16:47:10 -->
<!-- SAS XML Libname Engine Map -->
<!-- Generated by XML Mapper, 9.1.0335.20070926.1036 -->
<!-- ##### -->
<!-- ### Validation report ### -->
<!-- ##### -->
<!-- Map validation completed successfully. -->
<!-- ##### -->
<SXLEMAP version="1.0">
```

```
<!-- ##### -->
```

```
<TABLE name="Item">
  <TABLE_XPATH>/ItemSearchResponse/Items/Item</TABLE_XPATH>
```

```
  <COLUMN name="ASIN">
    <XPATH>/ItemSearchResponse/Items/Item/ASIN</XPATH>
    <TYPE>character</TYPE>
    <DATATYPE>STRING</DATATYPE>
    <LENGTH>20</LENGTH>
  </COLUMN>
```

```
  <COLUMN name="Author">
    <XPATH>/ItemSearchResponse/Items/Item/ItemAttributes/Author</XPATH>
    <TYPE>character</TYPE>
    <DATATYPE>STRING</DATATYPE>
    <LENGTH>100</LENGTH>
  </COLUMN>
```

```
  <COLUMN name="Manufacturer">
    <XPATH>/ItemSearchResponse/Items/Item/ItemAttributes/Manufacturer</XPATH>
    <TYPE>character</TYPE>
    <DATATYPE>STRING</DATATYPE>
    <LENGTH>100</LENGTH>
  </COLUMN>
```

```
  <COLUMN name="ProductGroup">
    <XPATH>/ItemSearchResponse/Items/Item/ItemAttributes/ProductGroup</XPATH>
    <TYPE>character</TYPE>
    <DATATYPE>STRING</DATATYPE>
    <LENGTH>20</LENGTH>
  </COLUMN>
```

```
  <COLUMN name="Title">
    <XPATH>/ItemSearchResponse/Items/Item/ItemAttributes/Title</XPATH>
    <TYPE>character</TYPE>
    <DATATYPE>STRING</DATATYPE>
```



```
<LENGTH>200</LENGTH>  
</COLUMN>
```

```
<COLUMN name="TotalResults" retain="YES">  
  <XPATH>/ItemSearchResponse/Items/TotalResults</XPATH>  
  <TYPE>numeric</TYPE>  
  <DATATYPE>INT</DATATYPE>  
  <LENGTH>8</LENGTH>  
</COLUMN>
```

```
<COLUMN name="TotalPages" retain="YES">  
  <XPATH>/ItemSearchResponse/Items/TotalPages</XPATH>  
  <TYPE>numeric</TYPE>  
  <DATATYPE>INT</DATATYPE>  
  <LENGTH>8</LENGTH>  
</COLUMN>
```

```
</TABLE>
```

```
</SXLEMAP>
```

```
;;;
```

```
%macro AmazonQ ;
```

```
  data _null_ ;  
  call symput('my_filename_ref','amaz'!!'1') ;  
run ;
```

```
libname myxml xml xmlfileref=&my_filename_ref xmlmap=MAP;
```

```
data &my_filename_ref;  
  set myxml.item;  
run;
```

```
proc sql noprint;  
  select max(TotalPages) into:maxpage  
  from &my_filename_ref;  
quit;  
%put &maxpage;
```

```
  %do j=1 %to &maxpage;  
data _null_ ;  
  call symput('my_filename_ref','amaz'!!strip(&j)) ;  
run ;  
%put &my_filename_ref ;
```

```
libname myxml xml xmlfileref=&my_filename_ref xmlmap=MAP;
```

```
data &my_filename_ref;  
  set myxml.item;  
run;
```

```
%if &j=1 %then %do ;  
  data amazon_dataset ;
```



```
        set &my_filename_ref ;
run ;
%end ;
%else %do ;
    proc append base=amazon_dataset data=&my_filename_ref ;
        run ;
    %end ;

proc datasets library=work nolist nowarn memtype=data ;
    delete &my_filename_ref ;
quit ;

filename &my_filename_ref clear ;
%IF (&j > 400) %THEN %put Maximum number of datasets reached;
%IF (&j > 400) %THEN %RETURN ;
%end ;
%mend ;

%AmazonQ;
/*end of SAS code*/
```

Please follow these steps to use this SAS code correctly:

- 1) In the first data step you have to provide a Keyword as a search parameter. In the above example 'Base%20SAS%20Programming' has been used but you can adapt this to your needs. Please do not forget to put %20 if your search term includes blanks. Example: Keywords=SAS%20Programming and NOT keywords=SAS Programming.
- 2) Run the entire SAS code.
- 3) The Dataset that is created is located in the work library and is called 'Amazon_dataset'.
- 4) See next page for the SAS Dataset.

Results in SAS Dataset:



VIEWTABLE: Work.Amazon_dataset

	ASIN	Author	Manufacturer	ProductGroup	Title	TotalResults	TotalPages
1	159047922X	SAS	SAS Publishing	Book	SAS Certification Prep Guide: Base Programming for SAS 9	13	2
2	0123735777	Mamdouh Refaat	Morgan Kaufmann	Book	Data Preparation for Data Mining Using SAS (The Morgan Kaufmann Series in Data Management Systems)	13	2
3	1580257917	SAS Publishing	SAS Publishing	Book	Step-By-Step Programming With Base SAS Software	13	2
4	0470164980	Ali Hezaveh	Wiley-Interscience	Book	SAS 9 Study Guide: Preparing for the Base Programming Certification Exam for SAS 9	13	2
5	1590473353	SAS Institute	SAS Publishing	Book	SAS Certification Prep Guide: Base Programming	13	2
6	1590472047	SAS Institute	SAS Publishing	Book	Base SAS 9.1 Procedures Guide, Volumes 1, 2, 3 and 4	13	2
7	1590477545	SAS Institute	SAS Institute.	Book	Base SAS 9.1.3 Procedures Guide	13	2
8	1555446620		SAS	Book	Getting Started with the SQL Procedure, Version 6, First Edition	13	2
9	B001TKSPCK	SAS Publishing(Manufactured by)	SAS Publishing	Book	SAS Certification Prep Guide: Base Programming for SAS 9 [With CDROM] [SAS CERTIFICATION PREP GD-OS]	13	2
10	1590475232	SAS Publishing	SAS Publishing	Book	SAS 9.1.3 Java Metadata Interface: User's Guide	13	2
11	1555440460	Inc Staff Sas Institute	SAS Institute, Incorporated	Book	Guide D'Introduction Au Logiciel SAS de Base Sur Ordinateur Personnel Version 6	13	2
12	1590475240	SAS Publishing	SAS Publishing	Book	SAS 9.1.3 Open Metadata Interface: User's Guide	13	2
13	0596100132	Chris Fehily	O'Reilly Media	Book	Base SAS Programming Pocket Reference (Pocket Reference (O'Reilly))	13	2