Consuming a Web Service(SOAP and RESTful) in Java

Cheat Sheet For Consuming Services in Java

This document will provide a user the capability to create an application to consume a sample web service (Both SOAP and RESTful) in Java using the following technologies 1> Eclipse IDE

Karan Moodbidri and Amey Gawde 7/25/2013

Prerequisites :

Before we start with the process of consuming web services

Eclipse IDE (Kepler preferred - Can be Downloaded from here - Link)

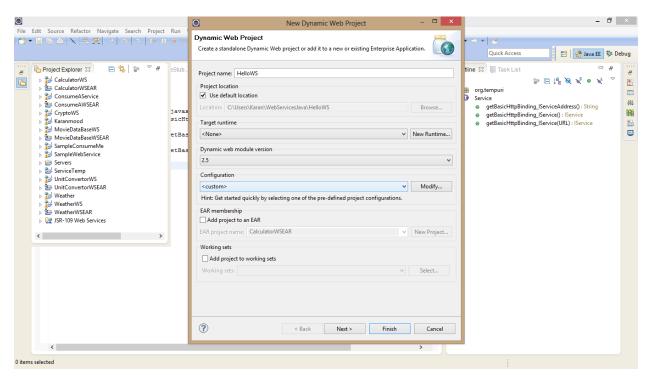
Consuming a Web Service in Java

- > Open Eclipse IDE
- ➢ Click on New
- ➢ Go to the Pop up Option 'Other'

0				Java EE - MovieDataBaseWS/src/cor	n/rit/cs/edu/MovieDataBaseWS.java	a - Eclipse		- 0	יי	×
File	Edit Source Refactor Navigate Search	Project Run	Wind	ow Help						
	New	Alt+Shift+N ►	8	JPA Project) 🕶 🜮 🗾 💝 🔳 🔳 🥹 🖧 🐕	• 🖓 • 🏷 🔶 • -	> *			
	Open File		6	Enterprise Application Project			Quick Access	🗄 😭 🤮 Java EE 🕏	🌣 Del	bug
	Close	Ctrl+W		Dynamic Web Project		D	D		-	
	Close All	Ctrl+Shift+W		EJB Project	💭 TryMe.java 🚺 ServiceStub.java	IService.java	Service.java			8
ren	Save	Ctrl+S	1	Connector Project	nt.HttpClient;			<u>^</u>		8
	Save As			Application Client Project						
R	Save All	Ctrl+Shift+S		Static Web Project Maven Project	lient;					
	Revert				=bResource;				2	
	Move									
-PI	Rename	F2	6		name, String year)					해
8	Refresh	F5		Session Bean (EJB 3.x) Message-Driven Bean (EJB 3.x)						M
	Convert Line Delimiters To	•	_ ⊑ \$ 		ate();					
e	Print	Ctrl+P	1	Folder	api.com/?t=" + name + "&y=" +	year;				
-	Switch Workspace			File	<pre>client.resource(apiCall); esource.get(String.class);</pre>					
	Restart	,		Example	esource.get(String.Glass);					
			-							
	Import			Other Ctrl+N public String GetMovieList (St	ring name)					
فكع	Export			{	ing name,					
	Properties	Alt+Enter		Client client = Client.cre	ate();					
	1 Service.java [SampleConsumeMe/src/]			<pre>String apiCall = null; apiCall = "http://www.omdb</pre>	api.com/?s=" + name;					
	2 IService.java [SampleConsumeMe/src/]		ι.	WebResource webResource =						
	3 TryMe.java [ConsumeAService/src/]		L.	<pre>String outputString = webR return outputString;</pre>	esource.get(String.class);					
	4 ServiceStub.java [ConsumeAService/]			recarn outputstring,						
	Exit		ι.	}						
			}							
									,	
<		>	<					>		
					Writable	Smart Insert 26	29			
_			_						_	

Search for Dynamic Web Project

> Select The same options as in the image



Click Next

۵.	New Dynamic Web Project	- 🗆 🗙	- 0 ×
File Edit Source Refactor Navigate Search Project Run C → C → C → C → C → C → C → C → C → C →	Java Configure project for building a Java application.		
Project Explorer 22 >		<u>Edt.</u> <u>Edt.</u> <u>Bernove</u>	time 13 Task List orgtempuri Service o getBasicHttpBinding_JServiceAddress(): String o getBasicHttpBinding_JService(): IService o getBasicHttpBinding_JService(URL): IService
<		>	•
0 items selected			

Click Next

8	🙆 New Dynamic Web Project – 🗖 🗙	- 0 ×
File Edit Source Refactor Navigate Search Project Run □ ▼ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	Web Module Configure web module settings.	v ⇒ v ≥ Quick Access 📴 😨 Java EE 🍄 Debug
CalculatorWSEAR CalculatorWSEAR CalculatorWSEAR CalculatorWSEAR CalculatorWSEAR ConsumeAWSEAR ConsumeAWSEAR SampleVebService CalculatorVS SampleVebService SampleVeb		tine 3 TaskList rogtempui Service 9 getBasicHttpBinding_IServiceAddress() : String 9 getBasicHttpBinding_IService(URL) : Bervice 1 getBasicHttpBinding_IService(URL) : Bervice 1 getBasicHttpBinding_IService(URL) : Bervice
o items selected		

- ➢ Click Finish
- Click on Project
- ➢ Click on New
- ➢ Click On other

\odot				Java EE - MovieDataBaseWS/src/cor	m/rit/cs/edu/MovieDataBaseWS.java - Eclip	ose		-	٥	×
Fil	e Edit Source Refactor Navigate Search	Project Run	Winde	w Help						
	New	Alt+Shift+N ►	8	JPA Project	• P 🗾 🌣 🗉 🔳 🕲 🖧 🔮 • 🏹 •	• 🌾 🔶 🔸 🔶	• 🖻			
	Open File		R	Enterprise Application Project			Quick Access	🗄 😭 🔮 Java EE	🏇 De	abug
	Close	Ctrl+W	8	Dynamic Web Project			-		-	
	Close All	Ctrl+Shift+W	8	EJB Project	💭 TryMe.java 🗍 ServiceStub.java 🗍 I	IService.java	Service.java		8	8
	Save	Ctrl+S	2	Connector Project	<pre>ht.HttpClient;</pre>				^ =	8
		Ctri+5	Ľ	Application Client Project	is in operations,					
i i i i i i i i i i i i i i i i i i i		Ctrl+Shift+S		Static Web Project						
48	Revert	Ctri+shirt+s	1 M2	Maven Project	lient; ebResource;					8
			2	Project	zbresource;					
	Move		6	Servlet						
Ľ		F2	1	Session Bean (EJB 3.x)	hame, String year)					행
\$		F5	5	Message-Driven Bean (EJB 3.x)	ate();					M
	Convert Line Delimiters To	*	1	Web Service						
0	Print	Ctrl+P	2	Folder	api.com/?t=" + name + "&y=" + year;	;				
	Switch Workspace		۲Ŷ	File	<pre>client.resource(apiCall); esource.get(String.class);</pre>					
	Restart			Example	source.get(String.Grass),					
2			C2	Other Ctrl+N						
2	Export		Г	public string GetMovieList (St	ring name)					
	Properties	Alt+Enter	ι.	Client client = Client.cre	ate();					
	1 Service.java [SampleConsumeMe/src/]		1	<pre>String apiCall = null; apiCall = "http://www.omdb</pre>						
	2 IService.java [SampleConsumeMe/src/]		ι.	WebResource webResource =						
	3 TryMe.java [ConsumeAService/src/]		ι.	String outputString = webR						
	4 ServiceStub.java [ConsumeAService/]		Ŀ	return outputString;						
	Exit		١.	}						
_	Exit									
			}							
									\sim	
1		>	<					>		
					Writable Smart I	Insert 26:29	1			

- Select Web Service Client
- > Enter WSDL Link in the Textbox

File Edit Source Refactor Navigate Search Project Run Window Help ①・副語合:文言意愛 』 つ ユ F II = 近 歩・①・Q・] ③・②・② ● ● ペ・) ● ■ ■ ③ ② ② ③ ● ③ ● ● ・ ● ・ 』 Quick Access	
Quick Access EP3 V Ive Investor	
Quick Access IP V lava FF	
	≸ Debug
Web Service Client CalculatorWS CalculatorWS CalculatorWS CalculatorWS CalculatorWS CalculatorWS CalculatorWS CalculatorWS CalculatorWS CalculatorWS Service definition and move the slider to set the level of client Service definition Service definition Service definition <td>\$ Debug S S S S S S S S S S S S S</td>	\$ Debug S S S S S S S S S S S S S
< >	
22 Hellows	

Click Next

8	Java EE - SampleConsumeMe/src/org/tempuri/Service.java - Eclipse	
File Edit Source Refactor Navigate Search Project Run Window	/ Help	
💼 - 🖩 🖻 🔍 🔜 🕱 💷 🔿 🔍 🕩 🗉 🖷 87 🏇 -	• O • Q • 🖏 • 🖏 • Ø • 😕 😂 🖋 • 🖗 🥑 🖉 🐨 🗏 🐨 💷 🐨 🖓 ½ 🖉 • 🖗 • + → + 🖉	
		🇱 Debug
	Web Service Client -	
Project Explorer 33 CalculatorWS CalculatorWSEAR ConsumeAWSEAR ConsumeAWSEAR ConsumeAWSEAR ConsumeAWSEAR ConsumeAWSEAR Deployment Descripton HelloWS MovieDataBaseWS MovieDataBaseWSEAR SampleVMSEAR SampleVMSEA	Web Service Proxy Page Image: Control of the service of the servi	
	~	
<	>	
HelloWS		

Click Finish

Now we need to write Code to Consume the Service.

- Click on Project
- Right Click on Java Resources in the Project Tree Structure
- ➢ Click on New
- Click on Class
- > Select the Same options as given in the Picture

<u></u>	0	New Java Class -		-	ð ×
File Edit Source Refactor Navigate Search Project Run Winds I □ • II III IIII IIIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Java Class Create a new Java class.	(ck Access	拳 Debug
ConsumedService Stub <td>Modifiers: © public di abstract fina Superclass: java.lang.Object Interfaces:</td> <td>s29 Brc Brc efault private protected al static Brc A Re create? A Re create? Grain(String[] args) m superclass t methods gure templates and default value here) ents</td> <td> getBa </td> <td>🗊 🖃 📮 🔀 🗙 🖉 🔍</td> <td></td>	Modifiers: © public di abstract fina Superclass: java.lang.Object Interfaces:	s29 Brc Brc efault private protected al static Brc A Re create? A Re create? Grain(String[] args) m superclass t methods gure templates and default value here) ents	 getBa 	🗊 🖃 📮 🔀 🗙 🖉 🔍	
Com.nt.egu.Naran.lava - HellowS/Src					

- ➢ Click on Finish
- > You will have a java program open in front of you
- ➢ Go to java resources
- ➢ Go into src
- > Check the name of the package other than the package you created
- ➢ Go into the package

Project Explorer 🛛 🖂 😪 🌣 🎽	ava 🕅 Service.java) TestClass.java	In HelloClent.java ⋈ [№] 2	 Quick Access	양 Java EE 🔅 De
 Copplant S Copplant S Copplant S Copplant Descriptor HelloWS Copplant Descriptor HelloWS Concodynews:WeatherWS WeatherScopFicuryiava WeatherScopF	<pre>ava</pre>		T Heiloriau 9 5	Counter 20 € Laster Counter 20 € 142 €	

- ➤ Remember to Check the name of the file with Proxy in the end.
- > Now import the WS package into your java program

Java EE - HelloWS/src/com	/rit/edu/ksm5629/HelloClent.java - Eclipse	- 🗇 🗙
File Edit Source Refactor Navigate Search Project Run Window Help		
📑 • 🗒 🖻 🖄 🗮 🕱 💷 💿 🔊 💷 💷 🖉 🎋 • 💽 • 🍇 • 🐯 • 🚱 🖉	- 🔗 🔻 🚱 💆 💱 🗉 🔟 🎱 🖓 🖓 🕈 🖗 🔻 🍄 🔶 🔹 🚽 🖆 –	
	Quick A	Access 🖹 😭 🖓 Java EE 🏇 Debug
📕 💭 TryMe java 🕖 ServiceStub 🕐 Service java 🕖 Service java	🖟 HelioCient.java 🛛 🔭 📁 🗖 🗄 Outline 🕄 🗐 Tas	
<pre>package com.rit.edu.kam5629; public class HelloClent { public static void main(String[] args) {</pre>	Comriteduk	
The import com.cdyne.ws.WeatherWS is never used	Writable Smart Insert 2:1	

- > Now Create an object of the proxy class you previously checked
- > Call the function of the web service with the object of the proxy class and print it.

Code should look like this:

- \triangleright Run the program
- > You have successfully Created a web client for the SOAP service.

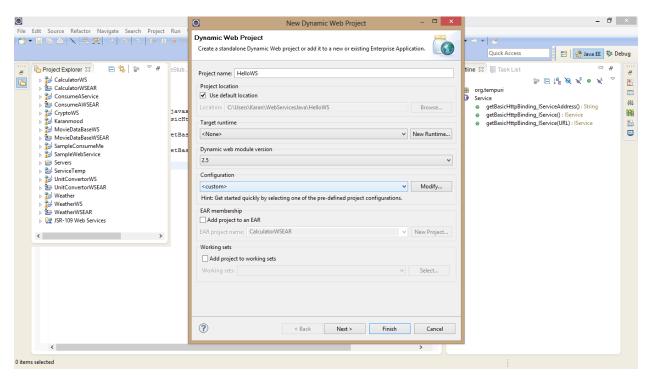
Creating Client for RESTful Services

- > Open Eclipse IDE
- Click on New
- ➢ Go to the Pop up Option 'Other'

\odot				Java EE - MovieDataBaseWS/src/con	m/rit/cs/edu/Movi	ieDataBaseWS.java	- Eclipse				- 0	×
File	Edit Source Refactor Navigate Search	Project Run	Winde	ow Help								
	New	Alt+Shift+N ▶		JPA Project	🔹 😵 🍠 💱 🗉	🔳 🎱 🆧 🐓	• 🖓 • 🍫 🔶	- ⇒ -	r d			
	Open File		8	Enterprise Application Project					Quick Access	🖹 🤮 Java	EE 参 D	ebug
	Close	Ctrl+W		Dynamic Web Project	B =	N	D			 1		
	Close All	Ctrl+Shift+W		EJB Project	🔊 TryMe.java	ServiceStub.java	IService.ja	iva U	Service.java			8
m	Save	Ctrl+S	1	Connector Project	nt.HttpClient;						^ <u>=</u>	04
	Save As	our o	Ľ	Application Client Project								
G	Save All	Ctrl+Shift+S		Static Web Project								
100	Revert		M	Maven Project	lient; >bResource;							
			2	Project								
-0	Move Rename	F2	6	Servlet								495
ା ଅ ଚ	Refresh	F2 F5	1	Session Bean (EJB 3.x)	name, String ye	ear)						1
<	Convert Line Delimiters To	, r,	5	Message-Driven Bean (EJB 3.x)	ate();							
		,	1	Web Service		name + "&y=" +						
	Print	Ctrl+P	C [°]	Folder	client.resource		year;					
	Switch Workspace	•		File	esource.get(Str	ring.class);						
	Restart		2	Example								
2	Import		E9	Other Ctrl+N								
2	Export		F	public string GetMovieList (St	ring name)							
	Properties	Alt+Enter	١.	{ Client client = Client.cre	ate():							
			١.	String apiCall = null;								
	1 Service.java [SampleConsumeMe/src/] 2 IService.java [SampleConsumeMe/src/]		ι.	apiCall = "http://www.omdk WebResource webResource =								
	2 IService.java [SampleConsumeMe/src/] 3 TryMe.java [ConsumeAService/src/]		ι.	String outputString = webF								
	4 ServiceStub.java [ConsumeAService/]			return outputString;								
				3								
_	Exit			1								
			}									
											\sim	
<		>	<								>	
						Writable	Smart Insert	26:29				

Search for Dynamic Web Project

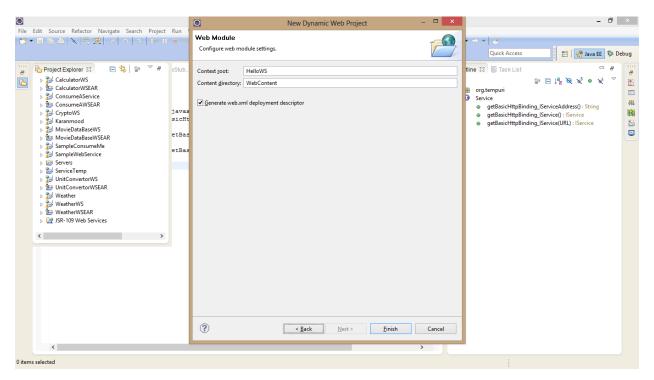
> Select The same options as in the image



Click Next

Image: Configure project for building a Java application. Image: Configure project for building a Java	<u>©</u>	New Dynamic Web Project	- 🗆 🗙	- 8 ×
Source folders on build path: Source folder Source folder <t< td=""><td>File Edit Source Refactor Navigate Search Project Run $\square \checkmark \blacksquare \square$</td><td></td><td></td><td></td></t<>	File Edit Source Refactor Navigate Search Project Run $\square \checkmark \blacksquare \square $			
0 items selected	 CalculatorWS CalculatorWSEAR ConsumeAVSEAR ConsumeAVSEAR ConsumeAVSEAR ConsumeAVSEAR Kranmood MovieDataBaseWSEAR SampleConsumeMe SampleKebService ServiceTemp ServiceTemp UnitConventorWSEAR Weather ServiceS 	Source folders on build path:	<u>E</u> dit <u>R</u> emove	tline S3

➢ Click Next



- Click Finish
- Click on Project
- Right Click on Java Resources in the Project Tree Structure
- Click on New
- Click on Class
- Select the Same options as given in the Picture

8	0	New Java Class	- 🗆 🗙	- 0	×
File Edit Source Refactor Navigate Search Project Run Wind [1] ◆] [1] ● [1] ● [1] ● [1] ● [2] ● [1] ● [2] ● [1] ● [2] ●		class.	C		bug
ConsumeASService ConsumeASSER	Name: Modifiers: Superclass: Interfaces: Which method stu	HelloWS/src com.rit.edu.ksm5629 com.rit.edu.Karan HelloClent	Browse Browse Browse Add Remove	Coutine 23 Task List orgtempui Sevice getBasicHttpBinding_ServiceAddress() : String getBasicHttpBinding_Service(URL) : Service getBasicHttpBinding_Service(URL) : Service	
Commucedurialanjava - Hellowa/SIC					

- Click on Finish
- > You will have a java program open in front of you
- > You will need to include the following two packages
- import com.sun.jersey.api.client.Client;
- import com.sun.jersey.api.client.WebResource;
- ➢ Follow the code given Below :

Note: The String held by variable apiCall should be the URL to the RESTful Service.

```
Client client = Client.create();
String apiCall = null;
apiCall = "http://www.exampleRestApi/q=";
WebResource webResource = client.resource(apiCall);
String outputString = webResource.get(String.class);
System.out.println(outputString);
```

> You have created a client for your RESTful Service.

We can Consume a REST based Service without using the Jersey API. I will be providing the instructions Below.

- > We would First Create a a Normal Java Project.
- ➢ For that , Click File
- > Click New
- Click Java Project

New	/ Java Project	– 🗆 🗙			
Create a Java Project					
Create a Java project in the workspace or in an external location.					
Project name: SampleConsumeRestSe	rvice				
✓ Use default location					
Location: C:\Users\Karan\WebServices	Java\SampleConsumeRestServi	Browse			
JRE					
Use an execution environment JRE:	JavaSE-1.7	~			
O Use a project specific JRE:	idk1.7.0	~			
O Use def <u>a</u> ult JRE (currently 'jdk1.7.0')	Con	nfigure JREs			
Project layout	and the Char				
 Use project folder as root for source Create separate folders for sources 		ure default			
0	<u>com</u>	are deroaren			
Working sets					
Add projec <u>t</u> to working sets					
W <u>o</u> rking sets:	×	S <u>e</u> lect			
The default compiler compliance level for the current workspace is 1.6. The new project will use a project specific compiler compliance level of 1.7.					
? < <u>B</u> ack	<u>N</u> ext > <u>F</u> inish	Cancel			

- > Enter the Name of the project
- ➢ Click Finish
- Right Click On Project
 Click on New
- Click on Class
- > Select the Same options as given in the Picture

8	New Java Class	- 🗆 🗙	- 0	×
File Edit Source Refactor Navigate Search Project Run Windo CI ▼ III III IIII IIIIIIIIIIIIIIIIIIIII	Java Class Create a new Java class.	O		ebug
Project Explorer S ConsumeAService ConsumeAService ConsumeAService ConsumeAService ConsumeAService ConsumeAService ConsumeAService ConsumeAService Deployment Descriptor HelloWS Deployed Resources Deployed Resources Deployed Resources Deployed Resources Deployed Resources MovieDataBaseWS MovieDataBaseWS	Modifiers: public default private protected abstract final static	Browse Browse Browse Add Remove	Coutline 33 Task List Gradempuni G	
com.rit.edu.Karan.java - HelloWS/src				

- ➢ Click on Finish
- ➤ Now I would go through the code
- ▶ First we will create a URL variable to store the URL for the Rest Service.

Example code :

URL url = new URL("http://www.omdbapi.com/?s=Titanic");

We open a HTTP Connection on that URL. We set the requestMethod to "GET" and we connect to the Rest Service.

Example Code:

```
HttpURLConnection connection = (HttpURLConnection)url.openConnection();
connection.setRequestMethod("GET");
connection.connect();
```

> We now to have read data from the rest service input stream

Example Code:

```
BufferedReader bufferReader = new BufferedReader(new
InputStreamReader(connection.getInputStream()));
```

> Then we read the data from the stream into s String buffer to printed onto the console.

Example Code:

```
String str;
StringBuffer stringBuffer = new StringBuffer();
while ((str = bufferReader.readLine()) != null) {
  stringBuffer.append(str);
  stringBuffer.append("\n");
  }
System.out.println(stringBuffer.toString());
```

➤ We have successfully consumed a service. The code entire code is as below. :