

## Dynamic Pages Documentation

URL to live web application: <http://malenah-portal.appspot.com/>

### Description of the web application/site

The web application, called the M.A.L.E.N.A.H. Portal, is constructed on the Google App Engine cloud service/platform in Python.

MALENAH stands for **M**obile **A**lly for **L**GBT people, **E**nhancing, through a **N**etwork, **A**ccess to **H**ealthcare. LGBT people face barriers to healthcare access and have a host of unique health-related needs. As such, the web application/site <http://malenah-portal.appspot.com> serves as an administrator portal, storing information about caring and culturally competent healthcare providers who are equipped to care for LGBT people in the hopes of closing the LGBT health disparities gap.

The MALENAH portal stores information about healthcare providers. Healthcare providers (class Provider) are stored as NDB models (entities) in the NDB datastore, including physicians, dentists, pharmacists, nurses, counsellors, and others. Providers have the following properties:

Attribute of the Provider class (NDB Model)	NDB Property type [1]	Description	Form input
first_name	ndb.StringProperty()	Healthcare provider's first name	<input type="text">
last_name	ndb.StringProperty()	Healthcare provider's last name	<input type="text">
phone	ndb.StringProperty()	Healthcare provider's phone number	<input type="tel">
email	ndb.StringProperty()	Healthcare provider's email address	<input type="email">
website	ndb.StringProperty()	Healthcare provider's website url	<input type="url">
best_time	ndb.TimeProperty()	Best time to contact the healthcare provider	<input type="time">
designation	ndb.StringProperty()	The healthcare provider's designation/degree (e.g. MD, RN, Pharm.D)	<input type="radio">
service(s)	ndb.KeyProperty (repeated=True)	Service(s) offered by the healthcare provider	<input type="checkbox">
accept_new_patients	ndb.BooleanProperty()	Whether or not the healthcare provider is accepting new patients	<input type="radio">

- The datastore also stores two additional NDB models as entities: healthcare services and healthcare professional designations, both of which have a name as a StringProperty() and are associated with healthcare providers.

Attribute of the Designation class (NDB Model)	NDB Property type [1]	Description	Form input
name	ndb.StringProperty()	Name of the designation associated with a healthcare provider	<input type="text">

Attribute of the Service class (NDB Model)	NDB Property type [1]	Description	Form input
name	ndb.StringProperty()	Name of the service provided a healthcare provider	<input type="text">

Test Plan

To ensure that the web application is working properly, I used this test plan, containing 31 manual tests.

#	Type	Test Case	Input	Expected Outcome	Observed Outcome
1	Blank	Empty database. Attempt to submit the "Add Provider" form with empty fields in Google Chrome, Firefox.	Click on the submit button in the "Add Healthcare Provider" form.	HTML5 form should prompt the user to complete the required fields before form can be submitted.	As expected, the healthcare provider form does not allow submission without required fields completed. <div>First Name First Name Last Name Last Name Please fill out this field.</div>
2	Edge case	Empty database. Attempt to submit the "Add Provider" form with empty fields in Safari, where support for the "required" tag is only partial [1].	Click on the submit button in the "Add Healthcare Provider" form.	HTML5 form should prompt the user to complete the required fields before form can be submitted.	The following error messages appear, as expected:  Form Submission is Unsuccessful for the following reason(s): You did not enter a first name. You did not enter a last name. You did not enter a phone number. You did not enter an email. You did not enter a website. You did not enter a contact time. You did not enter whether or not new patients are being accepted.
3	Blank	Submit empty designation	Click on the submit button in the "Add a Designation" form.	HTML5 form should prompt user to complete required field before submitting.	In the Google Chrome browser, the designation form does not allow submission due to the required attribute on the input tag. This is the correct outcome. In the Safari browser, as expected, the form submits but the following error message is displayed to the user: Unable to add record for the following reason(s): You did not enter a designation to add. This is also the correct outcome for this browser.
4	Blank	Submit empty service	Click on the submit button in the "Add a Service" form	HTML5 form should prompt user to complete required field before submitting.	In the Google Chrome browser, the designation form does not allow submission due to the required attribute on the input tag. This is the correct outcome. In the Safari browser, as expected, the form submits but the following error message is displayed to the user: Unable to add record for the following reason(s): You did not enter a service to add. This is also the correct outcome for this browser.
5	Edge	Empty database, create first (non-empty) service	Enter "Counseling" into the "Add a Service" form.	Counseling service added successfully (as shown in the /view page) and appears as a radio button choice in the "Add Provider" form on form submission. No records in the Provider or Designation tables	Service is recorded as expected Record added You added the following record (Service): <div>Service: Lab Services Back to Home</div> Service now appears in the provider form <div>Designation RN Services (check Lab Services Currently accep</div>
6	Edge	Empty database, create first designation	Enter "Pharm.D" into the "Add a Designation" form.	Pharm.D designation service added successfully (as indicated in the /view page) and appears as a checkbox in the "Add Provider" form. No records in the Provider or Designation tables	Designation recorded as expected You added the following record (Designation): <div>Designation: RN Back to Home</div> Designation appears in the provider form as expected. Best time of day to coi <div>Designation RN Services (check all</div>
7	Edge Blank	Empty database, create first provider without first creating a service or a designation	first name: Kelvin last name: Watson phone: 9716786247 email: abc@abc.com website: http://abc.com best time to contact: 11:59pm designation: services: accepting patients: No	Provider successfully added as evidenced by the /view page Provider appears in Provider table on form submission, with empty cells under the Designation and Services columns.	Record successfully added as expected. Record added You added the following record (Healthcare Pr <div>First Name: Kelvin Last Name: Watson Phone: 9716786247 Email: abc@abc.com Website: http://abc.com Best Time to Contact You: 11:59pm Designation: services: Accepting Patients: No Back to Home</div>

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					<div>You added the following record (Healthcare f</div> <table><tr><td>First Name:</td><td>Liam</td></tr><tr><td>Last Name:</td><td>Vanderbill</td></tr><tr><td>Phone:</td><td>abcdefghij</td></tr><tr><td>Email:</td><td>L@Vanderbill.org</td></tr><tr><td>Website:</td><td>http://LiamVanderbill.org</td></tr><tr><td>Best Time to Contact You:</td><td>11:00</td></tr><tr><td>Designation:</td><td>MD</td></tr><tr><td>Services:</td><td><div>• Weight Management</div></td></tr><tr><td>Accepting Patients:</td><td>Yes</td></tr></table> <div>Back to Home</div>	First Name:	Liam	Last Name:	Vanderbill	Phone:	abcdefghij	Email:	L@Vanderbill.org	Website:	http://LiamVanderbill.org	Best Time to Contact You:	11:00	Designation:	MD	Services:	<div>• Weight Management</div>	Accepting Patients:	Yes
First Name:	Liam																						
Last Name:	Vanderbill																						
Phone:	abcdefghij																						
Email:	L@Vanderbill.org																						
Website:	http://LiamVanderbill.org																						
Best Time to Contact You:	11:00																						
Designation:	MD																						
Services:	<div>• Weight Management</div>																						
Accepting Patients:	Yes																						
19	<div>Blank</div> <div>Basic</div>	Enter invalid email	"helena@bolton"	Application should reject invalid emails	<div>The application accepted an invalid email address missing a top-level domain. This is not the desired result.</div> <div>Record added</div> <div>You added the following record (Healthcare</div> <table><tr><td>First Name:</td><td>Helena</td></tr><tr><td>Last Name:</td><td>Bolton</td></tr><tr><td>Phone:</td><td>1234567890</td></tr><tr><td>Email:</td><td>helena@bolton</td></tr><tr><td>Website:</td><td>http://something</td></tr><tr><td>Best Time to Contact You:</td><td>07:00</td></tr><tr><td>Designation:</td><td>MD</td></tr><tr><td>Services:</td><td><div>• Diabetes Education</div></td></tr><tr><td>Accepting Patients:</td><td>Yes</td></tr></table> <div>Back to Home</div>	First Name:	Helena	Last Name:	Bolton	Phone:	1234567890	Email:	helena@bolton	Website:	http://something	Best Time to Contact You:	07:00	Designation:	MD	Services:	<div>• Diabetes Education</div>	Accepting Patients:	Yes
First Name:	Helena																						
Last Name:	Bolton																						
Phone:	1234567890																						
Email:	helena@bolton																						
Website:	http://something																						
Best Time to Contact You:	07:00																						
Designation:	MD																						
Services:	<div>• Diabetes Education</div>																						
Accepting Patients:	Yes																						
20	<div>Blank</div>	Submit "Add a Provider" form with missing first name in Chrome and Safari. ("required" attribute is not supported in Safari)	Empty form field	Application should either reject the form submission (Chrome) or display an error message (Safari)	<div>In the Google Chrome browser, the "required" attribute in the input tag correctly disallows form submission without first entering input into the form field.</div> <div>First Name</div> <div><div>First Name</div><div>Please fill out this field.</div></div> <div>In the Safari browser, the correct error message is displayed:</div> <div>Unable to add record for the following reason(s): You did not enter a first name</div>																		
21	<div>Blank</div>	Submit "Add a Provider" form with missing last name. ("required" attribute is not supported in Safari)	Empty form field	Application should either reject the form submission (Chrome) or display an error message (Safari)	<div>In the Chrome browser, form submission is rejected due to the "required" attribute for the input tag, as expected:</div> <div>Last Name</div> <div><div>Last Name</div><div>Please fill out this field.</div></div> <div>In the Safari browser, the result is the following error message, as expected:</div> <div>Unable to add record for the following reason(s): You did not enter a first name</div>																		
22	<div>Blank</div>	Submit "Add a Provider" form with missing phone. ("required" attribute is not supported in Safari)	Empty form field	Application should either reject the form submission (Chrome) or display an error message (Safari)	<div>In the Chrome browser, form submission is rejected due to the "required" attribute for the input tag, as expected:</div> <div>Phone</div> <div><div>1234567890</div><div>Please fill out this field.</div></div> <div>In the Safari browser, the result is the following error message, as expected:</div> <div>Unable to add record for the following reason(s): You did not enter a phone number.</div>																		
23	<div>Blank</div>	Submit "Add a Provider" form with missing email. ("required" attribute is not supported in Safari)	Empty form field	Application should either reject the form submission (Chrome) or display an error message (Safari)	<div>In the Chrome browser, form submission is rejected due to the "required" attribute for the input tag, as expected:</div> <div>Email</div> <div><div>you@example.com</div><div>Please fill out this field.</div></div> <div>Unable to add record for the following reason(s): You did not enter an email.</div>																		

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24	Blank	Submit "Add a Provider" form with missing designation.	Submit provider form with empty designation field.	Application should allow submission.	The form is submitted successfully, as expected, since designation is not a required form field: <table><tr><td>First Name:</td><td>Susan</td></tr><tr><td>Last Name:</td><td>Wong</td></tr><tr><td>Phone:</td><td>3427891237</td></tr><tr><td>Email:</td><td>susan@susanwong.com</td></tr><tr><td>Website:</td><td>http://susan.wong.com</td></tr><tr><td>Best Time to Contact You:</td><td>12:59</td></tr><tr><td>Designation:</td><td></td></tr><tr><td>Services:</td><td><div>• Lab Services</div></td></tr><tr><td>Accepting Patients:</td><td>No</td></tr></table> <a href="#">Back to Home</a>	First Name:	Susan	Last Name:	Wong	Phone:	3427891237	Email:	susan@susanwong.com	Website:	http://susan.wong.com	Best Time to Contact You:	12:59	Designation:		Services:	<div>• Lab Services</div>	Accepting Patients:	No		
First Name:	Susan																								
Last Name:	Wong																								
Phone:	3427891237																								
Email:	susan@susanwong.com																								
Website:	http://susan.wong.com																								
Best Time to Contact You:	12:59																								
Designation:																									
Services:	<div>• Lab Services</div>																								
Accepting Patients:	No																								
25	Blank	Submit "Add a Provider" form without checking off services(s).	Submit provider form with empty service field.	Form should still be successfully submitted.	The form is submitted successfully, as expected, since service(s) is not a required form field: <b>Record added</b> <b>You added the following record (Healthcan</b> <table><tr><td>First Name:</td><td>Matthew</td></tr><tr><td>Last Name:</td><td>Fields</td></tr><tr><td>Phone:</td><td>1234567890</td></tr><tr><td>Email:</td><td>matt@matthew.com</td></tr><tr><td>Website:</td><td>http://matthewfields.org</td></tr><tr><td>Best Time to Contact You:</td><td>14:00</td></tr><tr><td>Designation:</td><td>RD</td></tr><tr><td>Services:</td><td></td></tr><tr><td>Accepting Patients:</td><td>Yes</td></tr></table> <a href="#">Back to Home</a>	First Name:	Matthew	Last Name:	Fields	Phone:	1234567890	Email:	matt@matthew.com	Website:	http://matthewfields.org	Best Time to Contact You:	14:00	Designation:	RD	Services:		Accepting Patients:	Yes		
First Name:	Matthew																								
Last Name:	Fields																								
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Email:	matt@matthew.com																								
Website:	http://matthewfields.org																								
Best Time to Contact You:	14:00																								
Designation:	RD																								
Services:																									
Accepting Patients:	Yes																								
26	Basic Blank	Entering only space characters into the text input fields.	Submit only space characters into the text input fields.	Should not allow form submission.	Fields containing only whitespace characters are correctly rejected, and the user is prompted to provide non-whitespace input, as indicated by the following error: Unable to add record for the following reason(s): You did not enter a first name. You did not enter a last name. You did not enter a phone number.																				
27	Basic	Illegal characters in any of the text fields (first and last names, phone, url, email etc)	Submit non-numeric characters to the phone number and/or website field(s).	Should not allow form submission, or display error message to user.	Form submission was allowed, but this is not the desired result. Notice the invalid characters in the email and website fields. <b>You added the following record (Health</b> <table><tr><td>First Name:</td><td>Kelvin</td></tr><tr><td>Last Name:</td><td>Watson</td></tr><tr><td>Phone:</td><td>@ @ @</td></tr><tr><td>Email:</td><td>you@example.com</td></tr><tr><td>Website:</td><td>http://abc@abc.com</td></tr><tr><td>Best Time to Contact You:</td><td>12:59</td></tr><tr><td>Designation:</td><td>B.Sc</td></tr><tr><td>Services:</td><td><div>• Lab Services</div></td></tr><tr><td>Accepting Patients:</td><td>No</td></tr></table> <a href="#">Back to Home</a>	First Name:	Kelvin	Last Name:	Watson	Phone:	@ @ @	Email:	you@example.com	Website:	http://abc@abc.com	Best Time to Contact You:	12:59	Designation:	B.Sc	Services:	<div>• Lab Services</div>	Accepting Patients:	No		
First Name:	Kelvin																								
Last Name:	Watson																								
Phone:	@ @ @																								
Email:	you@example.com																								
Website:	http://abc@abc.com																								
Best Time to Contact You:	12:59																								
Designation:	B.Sc																								
Services:	<div>• Lab Services</div>																								
Accepting Patients:	No																								
28	Basic	Edit provider with no associated services	Click on "Edit" next to a provider with no associated services.	Edit form should show no checked services.	<div>[[0]] Kevin Watson 1234567890 kelvin@watson@gmail.com http://abc.com 12:59 AM B.Sc</div> <b>Edit Record</b> <table><tr><td>First Name:</td><td>Kelvin</td></tr><tr><td>Last Name:</td><td>Watson</td></tr><tr><td>Phone:</td><td>1234567890</td></tr><tr><td>Email:</td><td>kelvin@watson@gmail.com</td></tr><tr><td>Website:</td><td>http://abc.com</td></tr><tr><td>Best Time to Contact You:</td><td>12:59 AM</td></tr><tr><td>Designation:</td><td><div><input checked="" type="radio"/> B.Sc</div><div><input type="radio"/> MD</div><div><input type="radio"/> Pharm.D</div><div><input type="radio"/> RD</div><div><input type="radio"/> RN</div></td></tr><tr><td>Services:</td><td><div><input type="checkbox"/> Diabetes Education</div><div><input type="checkbox"/> Lab Services</div><div><input type="checkbox"/> Nutrition</div><div><input type="checkbox"/> Psychiatry</div><div><input type="checkbox"/> Weight Management</div></td></tr><tr><td>Accepting Patients:</td><td><div><input type="radio"/> Yes</div><div><input checked="" type="radio"/> No</div></td></tr><tr><td>Update</td><td><a href="#">Update Record</a></td></tr></table>	First Name:	Kelvin	Last Name:	Watson	Phone:	1234567890	Email:	kelvin@watson@gmail.com	Website:	http://abc.com	Best Time to Contact You:	12:59 AM	Designation:	<div><input checked="" type="radio"/> B.Sc</div> <div><input type="radio"/> MD</div> <div><input type="radio"/> Pharm.D</div> <div><input type="radio"/> RD</div> <div><input type="radio"/> RN</div>	Services:	<div><input type="checkbox"/> Diabetes Education</div> <div><input type="checkbox"/> Lab Services</div> <div><input type="checkbox"/> Nutrition</div> <div><input type="checkbox"/> Psychiatry</div> <div><input type="checkbox"/> Weight Management</div>	Accepting Patients:	<div><input type="radio"/> Yes</div> <div><input checked="" type="radio"/> No</div>	Update	<a href="#">Update Record</a>
First Name:	Kelvin																								
Last Name:	Watson																								
Phone:	1234567890																								
Email:	kelvin@watson@gmail.com																								
Website:	http://abc.com																								
Best Time to Contact You:	12:59 AM																								
Designation:	<div><input checked="" type="radio"/> B.Sc</div> <div><input type="radio"/> MD</div> <div><input type="radio"/> Pharm.D</div> <div><input type="radio"/> RD</div> <div><input type="radio"/> RN</div>																								
Services:	<div><input type="checkbox"/> Diabetes Education</div> <div><input type="checkbox"/> Lab Services</div> <div><input type="checkbox"/> Nutrition</div> <div><input type="checkbox"/> Psychiatry</div> <div><input type="checkbox"/> Weight Management</div>																								
Accepting Patients:	<div><input type="radio"/> Yes</div> <div><input checked="" type="radio"/> No</div>																								
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					<div><div>You updated the following record (Healthcare)</div><div><div><div><div><div>First Name:</div><div>Kelvin</div></div><div><div>Last Name:</div><div>Watson</div></div><div><div>Phone:</div><div>1234567890</div></div><div><div>Email:</div><div>kelvincswatson@gmail.com</div></div><div><div>Website:</div><div>http://abc.com</div></div><div><div>Best Time to Contact You:</div><div>10:59 AM</div></div><div><div>Designation:</div><div>B.Sc</div></div><div><div>Services:</div><div><div><div><div></div></div>Nutrition</div><div><div><div></div></div>Psychiatry</div></div></div><div><div>Accepting Patients:</div><div>No</div></div></div><div><a href="#">Back to Home</a></div></div></div></div>
29	Basic	Edit provider with no associated designation.	Click on "Edit" next to a provider with no associated designation.	Edit form should show no checked designation.	<div><div><div><div><div><a href="#">Go</a></div><div><a href="#">Sign In</a></div><div><a href="#">Forgot Password</a></div><div><a href="#">1234567890@angie@prescott.com</a></div><div><a href="#">http://angieprescott.com/07:00 AM</a></div><div><a href="#">Help</a></div><div><a href="#">Privacy Policy</a></div></div></div><div><div>Because the provider had no associated designations prior to clicking "Edit," the edit form correctly shows the designation field with no prepopulated radio buttons.</div><div><div><div><div><div><b>Edit Record</b></div></div></div><div><div><div><div><div>First Name:</div><div>Angie C.</div></div><div><div>Last Name:</div><div>Prescott</div></div><div><div>Phone:</div><div>1234567890</div></div><div><div>Email:</div><div>angiec@prescott.com</div></div><div><div>Website:</div><div>http://angieprescott.com</div></div><div><div>Best Time to Contact You:</div><div>07:00 AM</div></div><div><div>Designation:</div><div><div><div><div><div><input type="radio"/></div>B.Sc</div><div><div><input type="radio"/></div>MD</div><div><div><input type="radio"/></div>Pharm.D</div><div><div><input type="radio"/></div>RD</div><div><div><input type="radio"/></div>RN</div></div></div><div><div><input type="checkbox"/></div>Diabetes Education</div><div><div><input type="checkbox"/></div>Lab Services</div><div><div><input type="checkbox"/></div>Nutrition</div><div><div><input checked="" type="checkbox"/></div>Psychiatry</div><div><div><input type="checkbox"/></div>Weight Management</div></div></div><div><div>Accepting Patients:</div><div><div><input type="radio"/> Yes</div><div><div><input checked="" type="radio"/></div>No</div></div></div></div><div><div>Update</div><div><a href="#">Update Record</a></div></div><div>Last Accessed: 2016-01-15 18:49:18</div><div>Checking off Pharm.D as a designation, the form submits successfully and the record is correctly updated.</div><div><div><div><div><div><b>Record updated</b></div></div></div><div><div><div><div><div><b>You updated the following record (Healthcare)</b></div></div></div><div><div><div><div><div>First Name:</div><div>Angie C.</div></div><div><div>Last Name:</div><div>Prescott</div></div><div><div>Phone:</div><div>1234567890</div></div><div><div>Email:</div><div>angiec@prescott.com</div></div><div><div>Website:</div><div>http://angieprescott.com</div></div><div><div>Best Time to Contact You:</div><div>07:00 AM</div></div><div><div>Designation:</div><div>Pharm.D</div></div><div><div>Services:</div><div><div><div><div></div></div>Psychiatry</div></div></div><div><div>Accepting Patients:</div><div>No</div></div></div><div><a href="#">Back to Home</a></div></div></div></div></div></div></div></div></div></div></div></div></div></div>
	Basic	Edit provider's designation	In the Edit form, select a different designation than the original designation.	Edit form should be successfully submitted and database record successfully updated.	<div><div><div><div><div><a href="#">Go</a></div><div><a href="#">Sign In</a></div><div><a href="#">Forgot Password</a></div><div><a href="#">3427891237@susan@susanwong.com</a></div><div><a href="#">http://susanwong.com/12:59 PM</a></div><div><a href="#">Help</a></div><div><a href="#">Lab Services</a></div></div></div><div><div>In the Edit form, "RN" is pre-populated as expected.</div><div><div><div><div><div><b>Edit Record</b></div></div></div><div><div><div><div><div>First Name:</div><div>Susan</div></div><div><div>Last Name:</div><div>Wong</div></div><div><div>Phone:</div><div>3427891237</div></div><div><div>Email:</div><div>susan@susanwong.com</div></div><div><div>Website:</div><div>http://susanwong.com</div></div><div><div>Best Time to Contact You:</div><div>12:59 PM</div></div><div><div>Designation:</div><div><div><div><div><div><input type="radio"/></div>B.Sc</div><div><div><input type="radio"/></div>MD</div><div><div><input type="radio"/></div>Pharm.D</div><div><div><input checked="" type="radio"/></div>RD</div><div><div><input type="radio"/></div>RN</div></div></div><div><div><input checked="" type="checkbox"/></div>Diabetes Education</div><div><div><input checked="" type="checkbox"/></div>Lab Services</div><div><div><input type="checkbox"/></div>Nutrition</div><div><div><input type="checkbox"/></div>Psychiatry</div><div><div><input type="checkbox"/></div>Weight Management</div></div></div><div><div>Accepting Patients:</div><div><div><input type="radio"/> Yes</div><div><div><input checked="" type="radio"/></div>No</div></div></div></div><div><div>Update</div><div><a href="#">Update Record</a></div></div><div>On changing the designation from RN to RD, the /view page shows the record has been successfully updated.</div></div></div></div></div></div></div></div>

					<div><div><div>You updated the following record (Healthca</div><div><div><div>First Name:</div><div>Susan</div></div><div><div>Last Name:</div><div>Wong</div></div><div><div>Phone:</div><div>3427891237</div></div><div><div>Email:</div><div>susan@susanwong.com</div></div><div><div>Website:</div><div>http://susan.wong.com</div></div><div><div>Best Time to Contact You:</div><div>12:59 PM</div></div><div><div>Designation:</div><div>RD</div></div><div><div>Services:</div><div><div>• Lab Services</div></div></div><div><div>Accepting Patients:</div><div>No</div></div></div><div><a href="#">Back to Home</a></div></div></div>
30	Basic	Edit provider's services (add an additional service)	In the Edit form, select an additional service.	Edit form should be successfully submitted and database record successfully updated.	<div><div><div><div>Edit</div><div>Refresh</div><div>5031234567</div><div>btest@bwtest.com</div><div>http://nabc1.com</div><div>11:59 PM</div><div>RN</div><div><div>Diabetes Education</div><div>Nutrition</div><div>Psychiatry</div></div></div><div>In the edit form, Nutrition and Psychiatry is prepopulated, as expected.</div><div>Edit Record</div><div><div><div>First Name:</div><div>Edward</div></div><div><div>Last Name:</div><div>Watson</div></div><div><div>Phone:</div><div>5031234567</div></div><div><div>Email:</div><div>btest@bwtest.com</div></div><div><div>Website:</div><div>http://nabc1.com</div></div><div><div>Best Time to Contact You:</div><div>11:59 PM</div></div><div><div>Designation:</div><div><div><div><input type="radio"/> B.Sc</div><div><input type="radio"/> MD</div><div><input type="radio"/> Pharm.D</div><div><input type="radio"/> RD</div><div><input checked="" type="radio"/> RN</div></div><div><div>Diabetes Education</div><div>Lab Services</div><div><input checked="" type="checkbox"/> Nutrition</div><div><input checked="" type="checkbox"/> Psychiatry</div><div><input type="checkbox"/> Weight Management</div></div></div></div><div><div>Accepting Patients:</div><div><div><input checked="" type="radio"/> Yes</div><div><input type="radio"/> No</div></div></div></div><div><div>Update</div><div>Update Record</div></div><div>Last Accessed: 2016-01-15 18:33:31</div><div>Checking off an additional service adds another service to the provider, which is correctly submitted as expected.</div><div>Record updated</div><div><div><div>You updated the following record (Healthca</div><div><div><div>First Name:</div><div>Edward</div></div><div><div>Last Name:</div><div>Watson</div></div><div><div>Phone:</div><div>5031234567</div></div><div><div>Email:</div><div>btest@bwtest.com</div></div><div><div>Website:</div><div>http://nabc1.com</div></div><div><div>Best Time to Contact You:</div><div>11:59 PM</div></div><div><div>Designation:</div><div>RN</div></div><div><div>Services:</div><div><div>• Diabetes Education</div><div>• Nutrition</div><div>• Psychiatry</div></div></div><div><div>Accepting Patients:</div><div>Yes</div></div></div><div><a href="#">Back to Home</a></div></div></div></div></div>
31	Basic	Edit provider's services (remove a service)	In the Edit form, unselect a service.	Edit form should be successfully submitted and database record successfully updated.	<div><div><div><div>Edit</div><div>Refresh</div><div>5031234567</div><div>btest@bwtest.com</div><div>http://nabc1.com</div><div>11:59 PM</div><div>RN</div><div><div>Diabetes Education</div><div>Nutrition</div><div>Psychiatry</div></div></div><div>The edit form correctly prepopulates the three services associated with the provider.</div><div>Edit Record</div><div><div><div>First Name:</div><div>Edward</div></div><div><div>Last Name:</div><div>Watson</div></div><div><div>Phone:</div><div>5031234567</div></div><div><div>Email:</div><div>btest@bwtest.com</div></div><div><div>Website:</div><div>http://nabc1.com</div></div><div><div>Best Time to Contact You:</div><div>11:59 PM</div></div><div><div>Designation:</div><div><div><div><input type="radio"/> B.Sc</div><div><input type="radio"/> MD</div><div><input type="radio"/> Pharm.D</div><div><input type="radio"/> RD</div><div><input checked="" type="radio"/> RN</div></div><div><div><input checked="" type="checkbox"/> Diabetes Education</div><div>Lab Services</div><div><input checked="" type="checkbox"/> Nutrition</div><div><input checked="" type="checkbox"/> Psychiatry</div><div><input type="checkbox"/> Weight Management</div></div></div></div><div><div>Accepting Patients:</div><div><div><input checked="" type="radio"/> Yes</div><div><input type="radio"/> No</div></div></div></div><div><div>Update</div><div>Update Record</div></div><div>Removing Diabetes Education correctly results in the service being removed.</div><div>Record updated</div><div><div><div>You updated the following record (Hea</div><div><div><div>First Name:</div><div>Edward</div></div><div><div>Last Name:</div><div>Watson</div></div><div><div>Phone:</div><div>5031234567</div></div><div><div>Email:</div><div>btest@bwtest.com</div></div><div><div>Website:</div><div>http://nabc1.com</div></div><div><div>Best Time to Contact You:</div><div>11:59 PM</div></div><div><div>Designation:</div><div>RN</div></div><div><div>Services:</div><div><div>• Nutrition</div><div>• Psychiatry</div></div></div><div><div>Accepting Patients:</div><div>Yes</div></div></div><div><a href="#">Back to Home</a></div></div></div></div></div>





## **Explanation of Failures**

There are several outstanding bugs, which include the following:

1. The application currently does not parse URL's, and accepts invalid URL's with missing top-level domains and stores them in the database as strings.
  - In order to fix this bug, I could use regular expressions. An easier way would need to import a library such as the validator library, urlparse from urlparse, or the URLValidator from django.core.validators in Python to parse URL's. [6] [7]
2. The application currently does not parse phone numbers. Instead, it accepts invalid phone numbers and stores them in the database as strings..
  - In order to fix this bug, I would need to import a library such as phonenumbers 7.2.3 in Python to parse phone numbers. [8]
3. The application currently does not parse email addresses, and accepts invalid email addresses and stores them in the database as strings.
  - In order to fix this bug, I would need to import a library such as validate\_email 1.3 in Python to parse phone numbers. The Python validators library is also able to validate emails. [6] [9]

## **Discussion of Templating to Display Data**

Specifically, using Jinja templating to implement logic, render variables, access properties. For logic, I used the following control structures: the *for* loop, the *if/elif/else* statements. I also used Jinja for comparison of strings for equality, for example, `{% if s.name == t.name %}` compares two strings.

By using the *extends* tag, I was able to extend an html template called index.html to all of my other page templates. For instance, in my admin.html template, I used the statement `{% include index.html %}` to prevent the need to duplicate html tags and jinja expressions common among the pages, such as `<html>`, `<head>`, `<title>` `<body>` or `{{title}}`.

Using the *extends* tag also allowed me to override blocks within the index.html template as necessary. For instance, index.html contains a content *block* `{% block content %}` as well as an "all database data" block `{% block all_database_data %}`. Only the admin and view pages override the `all_database_data` block. All pages override the content block.

Finally, I used filters to pipe expressions into Jinja's built-in filters, including *length()* to get the number of items in a list, and *string()* to convert a string to Unicode.

## **Reflection (Changes I would make if I had to do it over again)**

I would design my application more thoroughly prior to coding to reduce the amount of code duplication. For instance, the `get()` and `post()` methods in the `view.py` `ViewHandler` contains many lines of code in common. This indicates that incorporating an appropriate object-oriented design pattern could have resulted in much cleaner code.

Some features that I missed were text validation, including stripping of leading and trailing white space. In addition, there should be stricter input validation of phone numbers `<input type="tel">` and emails `<input type="email">` records as explained in the outstanding bugs in the application. Importing of additional libraries to valid emails, phone numbers and website URL's can sufficiently address these issues.

Thinking ahead to the mobile application portion of the course, if I had to do this assignment over again, I would have made the code more adaptable/flexible to creating a sort of backend API to respond to requests from a mobile application.

## **Sources**

- [1] [https://cloud.google.com/appengine/docs/python/ndb/db\\_to\\_ndb](https://cloud.google.com/appengine/docs/python/ndb/db_to_ndb)
- [2] <http://caniuse.com/#feat=form-validation>
- [3] <http://jinja.pocoo.org/docs/dev/>
- [4] <http://jinja.pocoo.org/docs/dev/templates/>
- [5] <https://webapp-improved.appspot.com/guide/routing.html>

- [6] <https://validators.readthedocs.org/en/latest/>
- [7] <https://docs.python.org/2/library/urlparse.html>
- [8] <https://pypi.python.org/pypi/phonenumbers>
- [9] [https://pypi.python.org/pypi/validate\\_email](https://pypi.python.org/pypi/validate_email)