11/13/2015

Crisis Management System

Test Cases – V1.0

DONTCRYSIS SOFTWARE SOLUTIONS

Shuvam Nandi
[COMPANY NAME]

Test Cases

Testing a web application is a complex task, because it is made of several layers of logic – from HTTP-level request handling, to form validation and processing, to template rendering. With Django's test-execution framework and assorted utilities, several simple tests were written in Django using the **unittest** module built in to the Python standard library to verify if the code is doing what it should be doing.

Django's unit tests use a Python standard library module: **unittest**. This module defines tests using a class-based approach.

Since the web application consists of different functionalities, separate unit tests were written to test the different components, viz. models, views and forms. Black-box testing using equivalence class partitioning technique was implemented in the test cases, covering a wide range of input values to test whether the system is working as expected or not.

The test results are summarized as below:

1. Forms

The functionality of two forms in the DontCrysis Crisis Management System was tested, viz. CrisisCreateForm and SubscriberCreateForm. In both cases, it was tested whether the form is successfully created when correct data parameters and data types are passed. When either of these conditions were not satisfied, the form was not created successfully.

Input	Expected Result	Actual Result	Remarks
form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', ‘postalcode':'641231', 'type':2, 'severity':3, 'personName':'Shuvam', 'personPhone':'92801234'}	form.is_valid()	form.is_valid()	All correct data parameters and data types
form_data={'description':'A Petrol station is on fire', 'postalcode':'641231', 'type':2, 'severity':3, 'personName':'Shuvam', 'personPhone':'92801234'}	!form.is_valid()	!form.is_valid()	Missing attribute title
form_data={'title':'Major Fire', 'postalcode':'641231', 'type':2, 'severity':3, 'personName':'Shuvam', 'personPhone':'92801234'}	!form.is_valid()	!form.is_valid()	Missing attribute description
form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', 'type':2, 'severity':3, 'personName':'Shuvam', 'personPhone':'92801234'}	!form.is_valid()	!form.is_valid()	Missing attribute postalcode

form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', 'postalcode':'641231', 'severity':3, 'personName':'Shuvam', 'personPhone':'92801234'}	!form.is_valid()	!form.is_valid()	Missing attribute type
form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', 'postalcode':'641231', 'type':2, 'personName':'Shuvam', 'personPhone':'92801234'}	!form.is_valid()	!form.is_valid()	Missing attribute severity
form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', 'postalcode':'641231', 'type':2, 'severity':3, 'personPhone':'92801234'}	!form.is_valid()	!form.is_valid()	Missing attribute personName
form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', 'postalcode':'641231', 'type':2, 'severity':3, 'personName':'Shuvam'}	!form.is_valid()	!form.is_valid()	Missing attribute personPhone
form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', 'postalcode':'641231', 'type':'abc', 'severity':3, 'personName':'Shuvam', 'personPhone':'92801234'}	!form.is_valid()	!form.is_valid()	Incorrect data type for type
form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', 'postalcode':'641231', 'type':2, 'severity':3, 'personName':'Shuvam', 'personPhone':'928012234'}	!form.is_valid()	!form.is_valid()	Attribute length greater than bound for personPhone
form_data={'title':'Major Fire', 'description':'A Petrol station is on fire', 'postalcode':'1641231', 'type':'abc', 'severity':3, 'personName':'Shuvam', 'personPhone':'92801234'}	!form.is_valid()	!form.is_valid()	Attribute length greater than bound for postalcode

Table 1: Test cases for CrisisCreateForm

Input	Expected Result	Actual Result	Remarks
form_data={'name':'Shuvam Nandi', 'mobile':'91213809', 'nric':'K7275634', 'address':'22 Nanyang Avenue, Singapore', 'age':20, 'postalcode':'639810', 'email':'shuvamnandi7@gmail.com'}	form.is_valid()	form.is_valid()	All correct data parameters and data types
form_data={'name':'Shuvam Nandi', 'mobile':'91213809', 'nric':'K7275634', 'address':'22 Nanyang Avenue, Singapore',	!form.is_valid()	!form.is_valid()	Attribute length greater than

'age':20, 'postalcode':'6398102', 'email':'shuvamnandi7@gmail.com'}			bound for postalcode
form_data={'name':'Shuvam Nandi', 'mobile':'91213809', 'nric':'K7275634', 'address':'22 Nanyang Avenue, Singapore', 'age':'20a','postalcode':'639810', 'email':'shuvamnandi7@gmail.com'}	!form.is_valid()	!form.is_valid()	Incorrect data type for age
form_data={'mobile':'91213809', 'address':'22 Nanyang Avenue, Singapore', 'age':20, 'postalcode':'639810', 'email':'shuvamnandi7@gmail.com'}	!form.is_valid()	!form.is_valid()	Missing attribute name
form_data={'name':'Shuvam Nandi', 'nric':'K7275634', 'age':20, 'postalcode':'639810', 'email':'shuvamnandi7@gmail.com'}	!form.is_valid()	!form.is_valid()	Missing attribute mobile
form_data={'name':'Shuvam Nandi', 'mobile':'91213809', 'address':'22 Nanyang Avenue, Singapore', 'age':20, 'postalcode':'639810', 'email':'shuvamnandi7@gmail.com'}	!form.is_valid()	!form.is_valid()	Missing attribute nric
form_data={'name':'Shuvam Nandi', 'mobile':'91213809', 'nric':'K7275634', 'age':20, 'postalcode':'639810', 'email':'shuvamnandi7@gmail.com'}	!form.is_valid()	!form.is_valid()	Missing attribute address
form_data={'name':'Shuvam Nandi', 'mobile':'91213809', 'nric':'K7275634', 'address':'22 Nanyang Avenue, Singapore', 'postalcode':'639810', 'email':'shuvamnandi7@gmail.com'}	!form.is_valid()	!form.is_valid()	Missing attribute age
form_data={'name':'Shuvam Nandi', 'mobile':'91213809', 'nric':'K7275634', 'address':'22 Nanyang Avenue, Singapore', 'age':20, 'email':'shuvamnandi7@gmail.com'}	!form.is_valid()	!form.is_valid()	Missing attribute postalcode
form_data={'name':'Shuvam Nandi', 'mobile':'91213809', 'nric':'K7275634', 'address':'22 Nanyang Avenue, Singapore', 'age':20, 'postalcode':'639810'}	!form.is_valid()	!form.is_valid()	Missing attribute email

Table 2: Test cases for SubscriberCreateForm

2. Views

For unittesting views and urls, the expected redirection of urls to view functions was computed. The results are shown as below:

Input URL	Expected View Function	Actual View Function	Remarks
/homepage/	homepage	homepage	Test Pass
/homepage/map2	homepage_map2	homepage_map2	Test Pass

/invalid/	invalid_login	invalid_login	Test Pass
/login/	login	Login	Test Pass
/loggedin/	loggedin	Loggedin	Test Pass
/auth/	auth_view	auth_view	Test Pass
/logout/	logout	Logout	Test Pass
/register_success/	register_success	register_success	Test Pass
/subscribe/	createSubscriber	createSubscriber	Test Pass
/subscriber_successful/	subscriber_successful	subscriber_successful	Test Pass
/crisis/create/	crisis_create	crisis_create	Test Pass
/crisis/status/	status_crisis	status_crisis	Test Pass
/user/addreportreceiver/	addReportReceiver	addReportReceiver	Test Pass
/user/reportreceiveradded/	report_reciever_added	report_reciever_added	Test Pass

Table 3: Test cases for views

3. Models

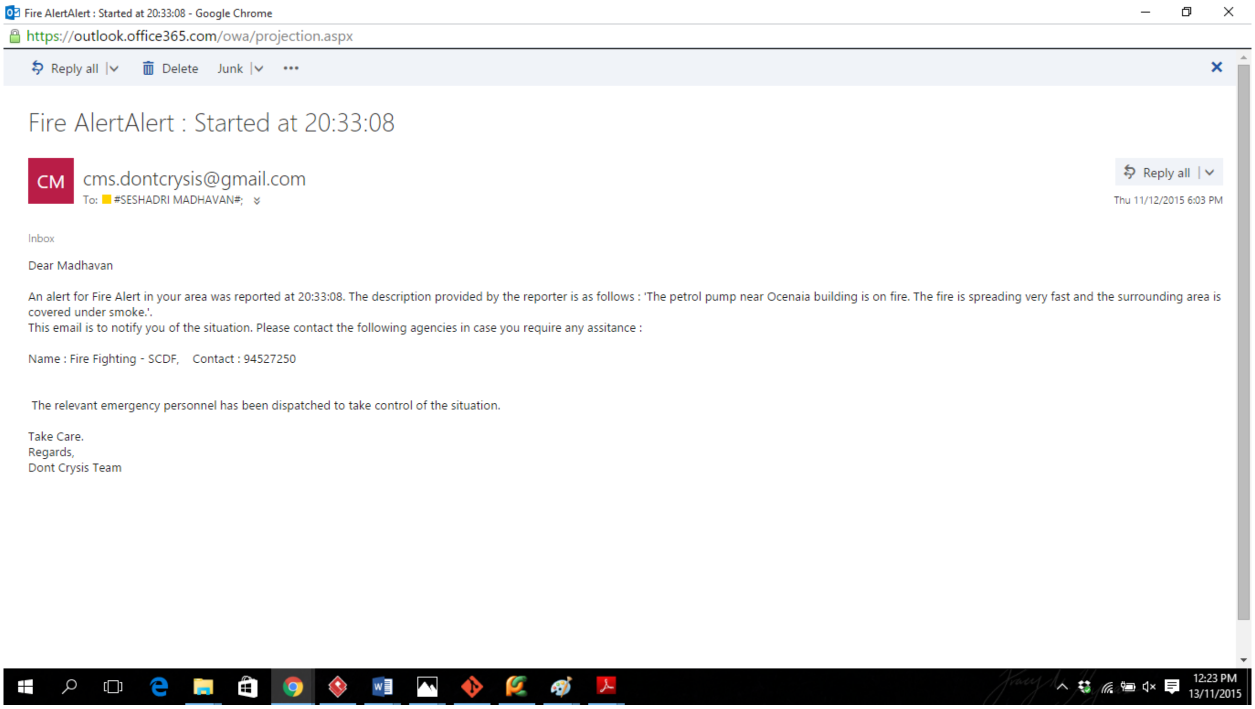
For unittesting models, the expected value after saving model data was compared with what was actually stored to check whether the data was correctly saved for the given model. A single attribute was extracted (here, email attribute) to check this. The results are as shown as below:

Input Data Saved	Expected Output	Actual Output	Remarks
Subscriber.objects.create(name="Shweta", mobile="86731264", nric="G1321234X", address="NTU Hall 10", postalcode="639810", age=20, email="shwetaramamurthy@gmail.com")	"shwetaramamurthy@gmail.com")	"shwetaramamurthy@gmail.com")	Test Pass
Subscriber.objects.create(name="Divesh", mobile="86542364", nric="G1322123S", address="NTU Hall 10", postalcode="639810", age=19, email="divesh.biyani@gmail.com")	"divesh.biyani@gmail.com"	"divesh.biyani@gmail.com"	Test Pass

Screenshots of Results

Given below are screenshots of different kind of events that occur in response to a crisis being created. This includes:

1. Email notification to subscriber using Gmail API
2. Facebook post on DontCrysis CMS page using Facebook API
3. SMS notification to crisis related agency using Twilio API
4. Pdf report sent by email to all report receivers


Fire AlertAlert : Started at 20:33:08 - Google Chrome
https://outlook.office365.com/owa/projection.aspx
Reply all
Delete
Junk
CM
Reply all
12:23 PM
13/11/2015

Fire AlertAlert : Started at 20:33:08

cms.dontcrysis@gmail.com
To: #SESHADRI MADHAVAN#;

Thu 11/12/2015 6:03 PM

Inbox

Dear Madhavan

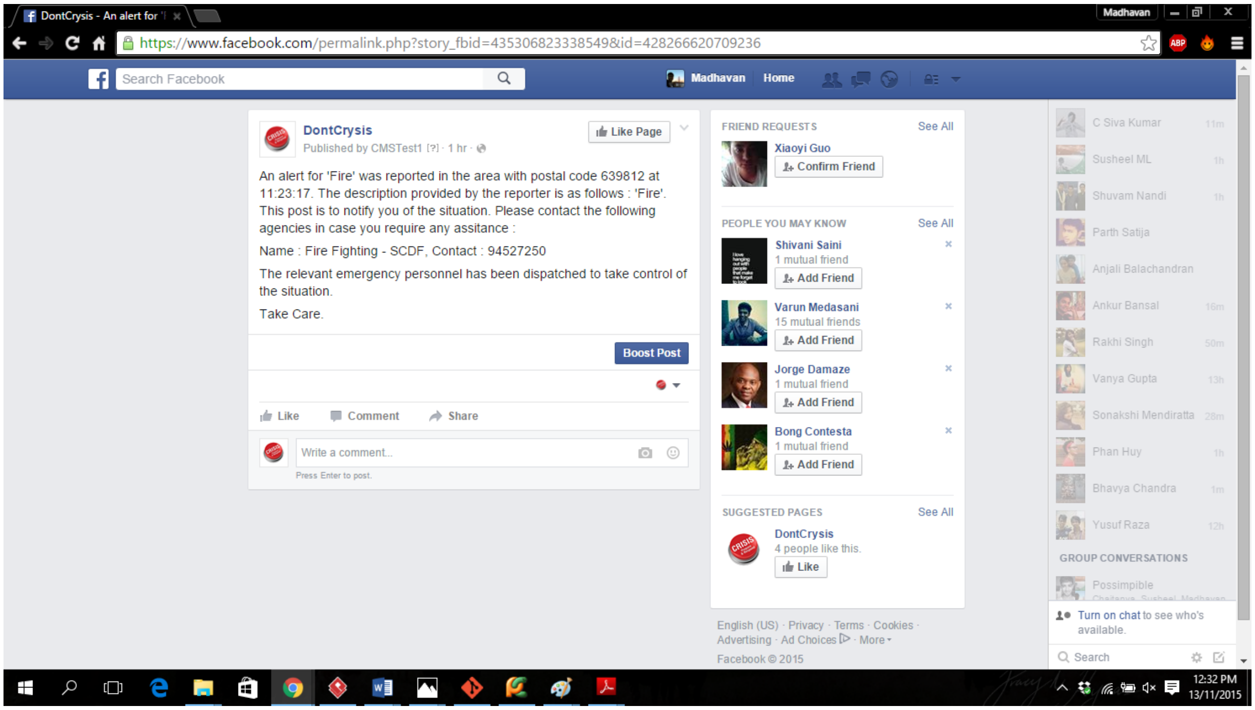
An alert for Fire Alert in your area was reported at 20:33:08. The description provided by the reporter is as follows : 'The petrol pump near Ocenaia building is on fire. The fire is spreading very fast and the surrounding area is covered under smoke.'.
This email is to notify you of the situation. Please contact the following agencies in case you require any assitance :

Name : Fire Fighting - SCDF,   Contact : 94527250

The relevant emergency personnel has been dispatched to take control of the situation.

Take Care.
Regards,
Dont Crysis Team

Figure 1: Email Notification of FireAlert sent immediately after crisis creation to all subscribers



DontCrysis
Published by CMSTest1 [?] · 1 hr ·

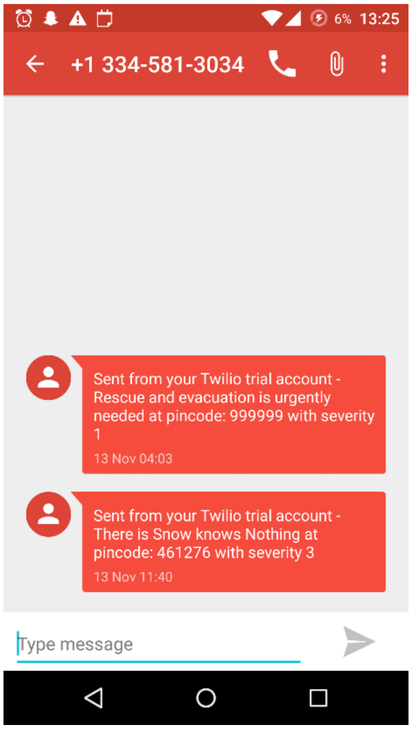
An alert for 'Fire' was reported in the area with postal code 639812 at 11:23:17. The description provided by the reporter is as follows : 'Fire'. This post is to notify you of the situation. Please contact the following agencies in case you require any assitance :

Name : Fire Fighting - SCDF, Contact : 94527250

The relevant emergency personnel has been dispatched to take control of the situation.

Take Care.

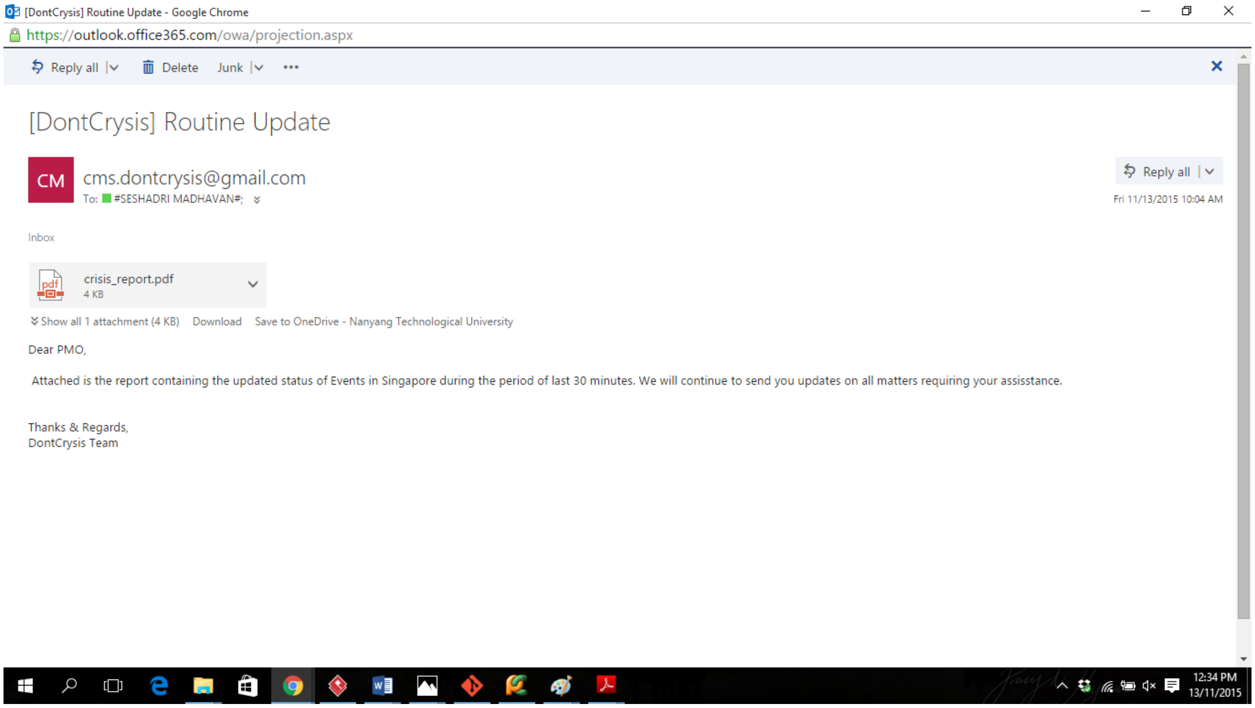
Figure 2: Facebook post on DontCrysis CMS page



Sent from your Twilio trial account - Rescue and evacuation is urgently needed at pincode: 999999 with severity 1
13 Nov 04:03

Sent from your Twilio trial account - There is Snow knows Nothing at pincode: 461276 with severity 3
13 Nov 11:40

Figure 3: SMS notification of a sample crisis


[DontCrysis] Routine Update - Google Chrome
https://outlook.office365.com/owa/projection.aspx
Reply all
Delete
Junk
Reply all
Inbox
crisis_report.pdf
4 KB
Show all 1 attachment (4 KB)
Download
Save to OneDrive - Nanyang Technological University
12:34 PM
13/11/2015

[DontCrysis] Routine Update

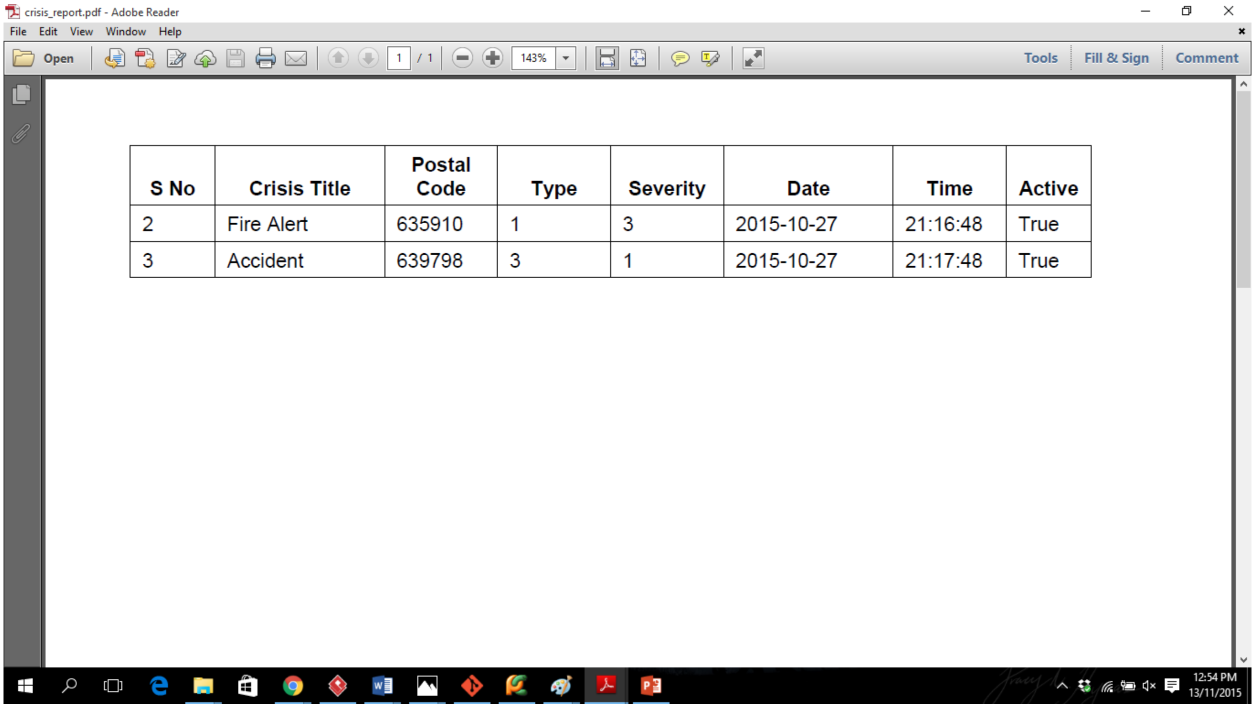
cms.dontcrysis@gmail.com
To: #SESHADRI MADHAVAN#;
Fri 11/13/2015 10:04 AM

Dear PMO,

Attached is the report containing the updated status of Events in Singapore during the period of last 30 minutes. We will continue to send you updates on all matters requiring your assisstance.

Thanks & Regards,
DontCrysis Team

Figure 4: Notification of PDF report sent by email to report receivers



S No	Crisis Title	Postal Code	Type	Severity	Date	Time	Active
2	Fire Alert	635910	1	3	2015-10-27	21:16:48	True
3	Accident	639798	3	1	2015-10-27	21:17:48	True

Figure 5: PDF report sent by email to report receivers