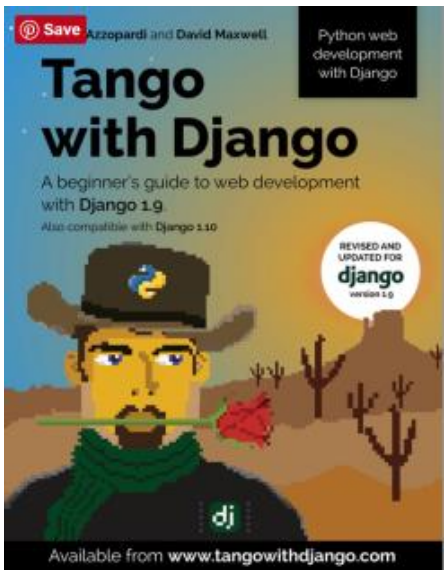
Web Application Development 2

Lab briefing sheet: weeks 1-5

Introduction

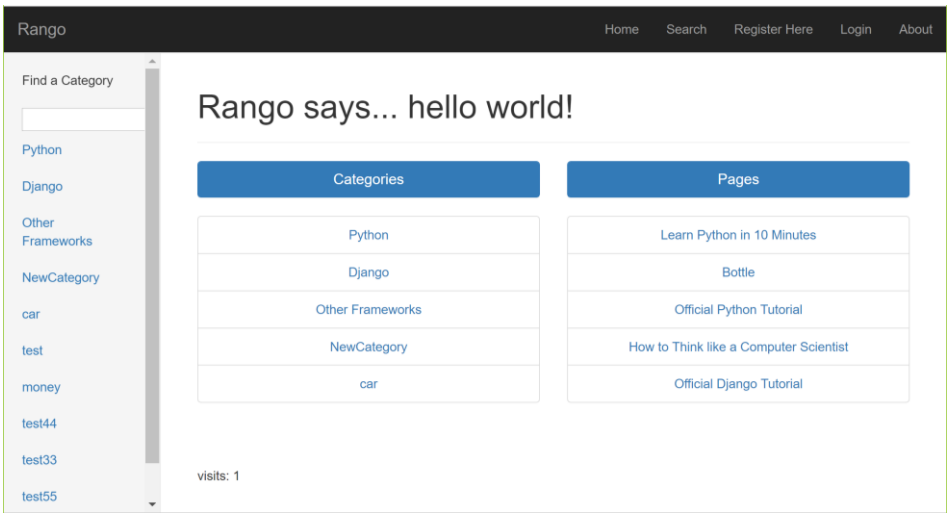
The course is based on the e-book "*Tango with Django: A beginners guide to web development*", by Leif Azzopardi and David Maxwell, Lean Publishing, 2016 (henceforth "TWD"). We will be using the version that has been updated for Django 1.9 and 1.10 (with further updates to ensure compatibility with Django 1.11). You will be using this book primarily during the lab sessions, especially in the first half of the course.



TWD contains a step-by-step tutorial that guides the reader through the development of a web application called *Rango*, built using Python and Django. Rango lets users browse through user-defined categories to access various web pages. During the first five lab sessions in particular you will be will be working through the chapters of TWD to develop your own version of Rango.

We recommend that you work through all 20 chapters in TWD, however only your work on the first 10 chapters will be assessed. The development of your Rango application will account for 10% of your overall mark for the course. Moreover, successful completion of Rango will give you the skills that you need in order to work on the WAD2 team project later, which accounts for 40% of your overall mark.

Here is a screenshot of the final Rango application:



You can try out a completed version of Rango at http://rangodemo.pythonanywhere.com.

Obtaining TWD

TWD can be obtained in two ways:

- In a format suitable for on-screen reading, free of charge, via the University Library. Access can be obtained via the link on the course web page on Moodle

(http://moodle2.gla.ac.uk/course/view.php?id=5728) – see under "Course textbook". This version cannot be downloaded to your own PC (in pdf form, or in any other form).

- In pdf form from https://leanpub.com/tangowithdjango19, for a charge. Move the slider to the amount you are willing to pay (the minimum permitted at the time of writing is $9.99). Click on "Add e-book to Cart" and follow the instructions to obtain the book in pdf format (other formats are available for phones, tablets and kindles, but pdf format is best for the Level 2 lab machines).

Lab session for week 1

Read Chapter 1 of TWD but skip Chapter 2. Instead you should follow the instructions immediately below to setup your working environment on the lab machines. (Likewise, the instructions below replace the appendix entitled "Setting up your System" in TWD.)

Setting up your working environment on the lab machines

Setting up a virtual environment

The lab machines already have a few things pre-configured, and they have restricted permissions, so you won't be able to follow the install instructions in Chapter 2 TWD. Instead you can do the following.

(1) Click the "🔎" symbol (magnifying glass) at the bottom left-hand corner of your screen and enter "cmd" into the search box. This will start up the Windows command prompt.

(2) You can list files in the current directory by entering the command "dir" and change directories with "cd".

(3) Switch to your home directory by entering H:[1] at the command prompt.

(4) Create a virtual environment for your development of the Rango application using the following command: **mkvirtualenv rango**,[2] You can replace "rango" with another virtual environment name if you prefer. You should now be working inside your virtual environment, which is indicated by "(rango)" prior to the command prompt.

(5) Install Django using the following command: **pip install django==1.11.7**

(6) Install Pillow using the following command: **pip install pillow**

Now that you have your virtual environment created with Django and Pillow installed, you can create a project.

(7) To create a new Django project, change directory to the folder H:\Workspace and issue the following command:

django-admin startproject tango_with_django_project

(8) Change directory to the top-level folder of the project you have just created:

cd tango_with_django_project

(9) Run the app:

python manage.py runserver

(10) Open a web browser and visit the link http://127.0.0.1:8000/.

[1] If your home directory is not mapped to H:, try N: instead, or else click on "This PC" to see what drive your home directory is mapped to.

[2] If the command mkvirtualenv is not recognised, run **pip install virtualenvwrapper-win** and try again.

You should see a congratulations message. Well done! Now press control-C to terminate the execution of manage.py, so you can continue working on the command prompt.

For Steps 5-10 to work you need to be in your virtual environment. To activate it type in **workon rango**, and to deactivate it type **deactivate.**[3]

Setting up Git

You can now use the git commands.

(1) cd into your working directory if you are not there already – this is H:\Workspace.

(2) Set your user name: **git config --global user.name "Firstname Surname"** (replace "Firstname Surname" by your first name and surname).

(3) Set your user email: **git config --global user.email "2099999z@student.gla.ac.uk"** (replace "2099999z" by your GUID).

Now you can use clone, add, commit, push, etc on your repository. You will need a Github repository, so create one on github.com.

A Git crash course

Once you have completed the above steps, work through the appendix in TWD entitled "A Git Crash Course" to familiarise yourself with Git. Next, work through the following steps.

(1) Create a Github repository for your Rango application, called tango_with_django_project.
(2) Change directory to H:\Workspace\tango_with_django_project – this is where your Rango files reside in your workspace, as created earlier by django-admin startproject.
(3) Issue the following git commands:

```
git init
git add *
git commit -m "first commit"
git remote add origin https://github.com/<username>/tango_with_django_project.git
git push -u origin master
```

Replace <username> in the above sequence of commands by your Github username. You have now set up a remote repository for Rango on Github, and have linked it to your local repository in your workspace.

It is very important to ensure that your git repository is set up correctly. Inside H:\workspace you should have a folder tango_with_django_project. Inside that folder, you should have a file manage.py and another folder tango_with_django_project. Inside the latter folder, you should initially have four files: __init__.py, settings.py, urls.py and wsgi.py. Your file structure on Github should be similar: compare your own remote repository with the example one at https://github.com/wad2/tango_with_django_project.

If your git repository structure is not analogous to the structure described in the previous paragraph, **do not go any further**. Instead, repeat the above steps again as necessary. It is very important that your directory structure is set up correctly, otherwise the automated tests that will be run on your Rango app later on in the course will be likely to fail. It is much better to take the time now to complete this step correctly rather than to persist with an

[3] Information about other commands relating to virtual environments that you can run is available from the following URL: https://pypi.python.org/pypi/virtualenvwrapper-win.

incorrect directory structure as this could make life very difficult for you later on (as several students found last year).

Running an example app

We will launch the Polls app from the Django Beginners' Tutorial.

(1) Within the directory H:\Workspace, git clone the relevant repository as follows: **git clone https://github.com/wad2/django_tutorial_1.11.git**

(2) Change directory using the command **cd django_tutorial_1.11**.

(3) Ensure that you are still working in the virtual environment you created earlier (it might be called rango). If in doubt, enter **workon rango**.

(4) Now run the app: **python manage.py runserver**.

(5) In your web browser visit the link: http://127.0.0.1:8000/polls. You should find that you are able to see some simple questions, provide votes and see a summary of existing responses.

If you have completed this, move on to Chapter 3 of TWD.

Lab sessions for weeks 2-5

During the lab sessions for weeks 2-5, you should continue working on developing Rango, following Chapter 3 onwards of TWD. As mentioned above, the minimum that you should complete is up to the end of Chapter 10 of TWD, but it is recommended that you develop Rango up to the end of Chapter 20 of TWD. The IDLE and PyCharm IDEs are available for Python development; you may however prefer to develop Rango within PythonAnywhere. A recommended development schedule is as follows:

Week no.	Week ending	TWD chapters
1	12/01/2018	1, appendix on Git
2	19/01/2018	3, 4
3	26/01/2018	5, 6
4	03/02/2018	7, 8
5	09/02/2018	9, 10

The deadline for completing Rango up to the end of Chapter 10 is **Friday 9 February at 6.30pm**. For more information, see the separate assessed exercise document on the Rango exercise.