

WUKONG University Ticket System Manual

1. How to install the software

Option 1: Access via this URL to see the deployed version: <https://haichong.pythonanywhere.com/>

Option 2: Clone from Git to view our Django project from an IDE

2. How to configure and run the software

Do the following steps:

1. Create a virtual environment using the "python -m venv venv_name" command.
2. Run the top three commands of the first picture to install all the libraries used.
3. Run the "python manage.py migrate" command to initialise the database.
4. Then, export the environment variables in the second picture in the terminal.
5. Run the seed command to generate initial data for the database.
6. Run the command "python manage.py close_tickets" daily to detect and auto-close tickets due to 7 days of inactivity.
7. Run the command "python manage.py fetch_emails" every time you want to convert new incoming emails into tickets.

Note: The seeded tickets represent a fixed number of newly created tickets by certain students. If you want to generate more tickets, you can create a ticket in the system (by logging in as a student) or send an email to our official support address wukonghelpdesk@gmail.com. Other data will be generated dynamically as you perform actions under different roles in the ticket system.

If you use Linux or macOS, you can use the following command, if you use Windows, you have to use the suitable commands.

```
$ source venv/bin/activate
$ pip install -r requirements.txt
```

Before seeding, you have to export the API key and password as below:

```
$ export EMAIL_HOST_PASSWORD="oevg eqsq vljj lxmz"
$ export PERSPECTIVE_API_KEY="A1zaSyCUq-kMK-CtvEHP8v65bGtRpyzFN8h63Vo"
$ export AWS_ACCESS_KEY_ID="AKIAQSOI4WAYH3WH53ON"
$ export AWS_SECRET_ACCESS_KEY="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"
```

Then,

```
$ python manage.py migrate
$ python manage.py loaddata tickets/tests/fixtures/deploy_test_user.json
$ python manage.py seed
$ python manage.py runserver
$ python manage.py test tickets
```

The specific versions of libraries and frameworks are as follows:

asgiref==3.8.1

attrs==25.3.0

boto3==1.36.26
botocore==1.36.26
certifi==2025.1.31
cffi==1.17.1
channels==4.2.0
charset-normalizer==3.4.1
coverage==7.6.12
cryptography==44.0.2
cssselect==1.2.0
Django==5.1.6
django-storages==1.14.5
django-widget-tweaks==1.5.0
django-with-asserts==0.0.1
Faker==36.1.1
h11==0.14.0
idna==3.10
Jinja2==3.1.6
jmespath==1.0.1
libgravatar==1.0.4
lxml==5.3.1
MarkupSafe==3.0.2
moto==5.1.1
outcome==1.3.0.post0
pycparser==2.22
PySocks==1.7.1
python-dateutil==2.9.0.post0
python-dotenv==1.0.1
pytz==2025.1
PyYAML==6.0.2
requests==2.32.3
responses==0.25.6
s3transfer==0.11.2
selenium==4.30.0
six==1.17.0
sniffio==1.3.1
sortedcontainers==2.4.0
sqlparse==0.5.3
trio==0.29.0
trio-websocket==0.12.2
typing_extensions==4.12.2
tzdata==2025.1
urllib3==2.3.0
websocket-client==1.8.0
Werkzeug==2.1.2
wsproto==1.2.0

xmltodict==0.14.2

3. How to test the software

3.1. Email-Side Testing

Step 1. The Gmail account we use

Email address	Password	Role
wukongstudent@gmail.com	wukong123456!	Student
wukongspecialist@gmail.com	wukong123456!	Specialist
wukonghelpdesk@gmail.com	wukong123456!	Program Officer

Note on Helpdesk Gmail (wukonghelpdesk@gmail.com):

This account is protected by two-factor authentication (2FA). When logging in from a new device or location, a verification code will be required.

To obtain the 2FA code, you may:

- **Call:** +44 7376 469992
- **Or email:**
 - xujiangjing00@outlook.com
 - k21134158@kcl.ac.uk

Please reach out via phone or email if you need access to the verification code.

Step 2: Load Test Data

You can log in with the following accounts to test different roles:

Username (include “@”)	Password	Role
@wukongstudent	wukong123456!	Student
@wukonghelpdesk	wukong123456!	Program Officer
@wukongspecialist	wukong123456!	Specialist

Step 3. Send a Test Email

1. Log in to Gmail using wukongstudent@gmail.com with the password: [wukong123456!](#)
2. Send an email to: wukonghelpdesk@gmail.com

Make sure the email includes:

A clear subject and body text.

Optional: attachments (e.g., PDF, DOCX, image files).

Example Email:

- Subject: "Request for Course Enrollment Extension"
- Body: "Dear officer, I would like to request an extension for course enrollment due to personal reasons."

Step 4: Run Email Fetching Command

Open a new terminal window (since the first one is running [runserver](#)), navigate to your project root, and run:

```
$ source venv/bin/activate
$ pip install -r requirements.txt
$ python manage.py fetch_emails
```

This command will:

- Log in to the configured IMAP mailbox
- Fetch all unread emails
- Parse and create corresponding tickets in the database
- Save any attachments to the S3 folder
- Send a confirmation email back to the student (may end up in spam)
- Mark the original email as read

Step 5: Verify Ticket Creation

Log into the web system using:

- Any student's account to view the newly submitted ticket

- Any program officer's account to review and manage the ticket

Step 6: Redirect Ticket to Specialist

As a Program Officer, you can assign the ticket to a Specialist. After that:

- The specialist will receive a notification email (check Gmail wukongspecialist@gmail.com, password: **wukong123456!**; check spam if needed)
- Alternatively, the specialist can log in directly to the web system to view the assigned ticket

Step 7: Send Information Request

If the ticket lacks sufficient information, the Program Officer or Specialist can request clarification from the student:

- The student will receive an update notification email (check Gmail wukongstudent@gmail.com)
- The student can also view the update by logging into the web system

Step 8: View Tickets in the Web Interface

All users (Student, Program Officer, Specialist) can log in to the WUKONG system via the web interface to view, update, and respond to tickets.

Note on Viewing Attachments:

Due to the current use of local file storage instead of AWS S3 (for testing purposes), the ticket attachments are served from the local development server. This means:

- If accessed from outside the local environment (e.g., the instructor's browser), the attachments may not load properly.
- However, the attachment URL is still generated and visible.
When you hover your mouse over the attachment link, you can see the correct file path, which proves that the file has been uploaded and stored correctly in the system.

This can serve as evidence that the attachment handling functionality is working as expected, even if it cannot be accessed remotely via S3 during local testing.

3.2. Frontend Testing

Do the following steps:

1. Open a new terminal
2. Activate the virtual environment by running “source venv/bin/activate”
3. Install the Selenium package using “pip install selenium”
3. Start the Django development server with “python manage.py runserver” (keep this terminal running)
4. Open another terminal window.
5. Navigate to the directory where the Selenium test file is located
6. Run the test script by executing “python selenium_test.py”

All the commands used in the above steps are listed below:

```
$ source venv/bin/activate
$ pip install selenium
$ python manage.py runserver
$ cd tickets/tests
$ python selenium_test.py
```

When the front-end test script runs successfully, it will automatically launch a Chrome browser window. The script simulates user interactions by first scrolling down the homepage, which triggers an automatic navigation to a new page. Then, clicking anywhere on the page will navigate back to the homepage. This process is repeated three times to verify consistent interactive behavior across multiple pages.

After completing all actions, the browser window will automatically close, and the test results will be printed in the terminal.

3.3. Backend Testing

You can run all automated tests using the following command: “python manage.py test”. If you encounter a client error, you need to redo Step 4 in the *How to Configure and Run* section to export all the environment variables. You also need to ensure that the AWS region is set to “eu-west-2”.

Additionally, some backend functionalities can be manually tested by navigating through the system and observing the impact of each action. Following the screencast may help guide this process.

- If you want to log in as a student, the username is @johndoe
- If you want to log in as a specialist, the username is @janedoe
- If you want to log in as a program officer, the username is @charlie
- All their passwords are “Password123”

In order to see the coverage report, you can choose to run the tests with the command

```
$ coverage run manage.py test
$ coverage report ( coverage html )
```

3.4. AI-Side Testing

We have decided to use GenAI to make the system more efficient, saving users time and effort. For instance, it will help program officers assign relevant specialists more quickly. Additionally, it will generate responses for program officers or specialists.

To test the AI functionality, you can either navigate through the system as shown in the screencast and explore the AI-related features or refer to the Testing section of the report. In this section, we describe two types of manual tests used to evaluate the accuracy and reliability of AI-generated decisions.

For example, the following figure illustrates a test where AI-generated data was evaluated based on a ticket's title and description. We sampled 20 tickets and asked four students to rate the AI's performance on a scale of 1 to 5. The overall rating was 4.76, indicating a highly satisfactory performance.

	Query Title	Query Description	AI Generated Answer	AI Predicted Department	AI Predicted Priority	Rating 1 (0-5)	Rating 2	Rating 3	Rating 4	AVERAGE Rating for AI	Overall Rating
1	Exploring Internship Opportunities Abroad.	I am a junior majoring in international business and I am interested in exploring internship opportunities abroad, specifically in Asia, to gain global work experience and build my professional network.	Our university has partnerships with several companies in Asia, offering internship opportunities in countries such as China, Japan, and Singapore. I recommend researching these opportunities and reaching out to our career services department for guidance on the application process. Additionally, you may also consider programs such as the International Internship Program or the Global Internship Experience.	study_abroad	medium	4	5	5	5	4.75	4.76
2	I am inquiring about the availability of financial aid for the upcoming semester.	I am a junior majoring in business administration and I am struggling to pay for my tuition. I have a part-time job but it's not enough to cover my expenses. I was wondering if there are any scholarships, grants or loans available that I can apply for to help me with my financial situation.	Our university offers various forms of financial aid, including scholarships, grants, and loans. I recommend checking our website or visiting the financial aid office to explore options such as the Business Administration Scholarship, Federal Work-Study Program, and Direct Student Loans. Additionally, you may consider applying for external scholarships.	financial_aid	high	5	5	5	4	4.75	
3	Delay in Receiving Study Abroad Application Decision.	I am concerned that I have not received a decision on my study abroad application despite submitting it over a month ago, and the program is set to start in three weeks. Could you please provide an update on the status of my application and let me know if there's any additional information required to facilitate the decision-making process?	I apologize for the delay in reviewing your study abroad application. Our team is currently processing applications, and I expect a decision to be made within the next week. In the meantime, please ensure that all required documents are uploaded to your online portal, and we will be in touch if any additional information is needed.	study_abroad	high	5	5	4	4	4.5	
4	Lost Luggage during Study Abroad Trip.	I am writing to report an incident that occurred during my recent study abroad trip to Europe. Upon arrival at the airport, I realized that my luggage was missing, which contained important documents, electronics, and personal belongings. I had checked in my luggage at the airport of departure, but it did not appear on the baggage claim belt at my destination. I would like to request assistance in locating my luggage and compensation for the losses I incurred.	I apologize for the inconvenience you experienced during your study abroad trip. I have forwarded your report to our travel insurance provider, and they will contact you shortly to discuss the process for locating your luggage and providing compensation for your losses. In the meantime, please gather any relevant documentation, such as receipts and proof of ownership, to support your claim.	study_abroad	medium	5	4	5	5	4.75	
5			Our career services department offers								

3.5. Attachment Amazon Cloud (S3) Storage Testing

Logging into the S3 storage account is not possible because the account is linked to a student's bank details. However, you can verify that attachments uploaded by students via email or the software are successfully stored and retrieved. To do this, hover over the attachment links when viewing ticket details; the displayed URL will

show the file path which will confirm that the files have been stored and extracted as intended. Moreover, you can download from the program officer or specialist account to see that they are the same attachments as the ones the student uploaded.