

Agile Software Development

UNICHATBOT

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MVP

| | | | |
|---------|---|---|-----------------------------|
| Dataset | Chatbot where you can ask questions in writing and get answers in writing | Chatbot where you can verbally ask questions and get answers verbally | Chatbot with ontology added |
| 1 | 2 | 3 | 4 |

Table 1. MVP (Minimum Viable Product)

Sprint 1

User Stories

As a user role, I want to ask questions about transportation so that I can get answers to my questions about buses with certain numbers.

As a user role, I want to ask questions about transportation so that I can get answers to my questions about bus 605.

As a user role, I want to ask questions about transportation so that I can get answers to my questions about bus 606.

As a user role, I want to ask questions about transportation so that I can get answers to my questions about bus 607.

As a user role, I want to ask questions about transportation so that I can get answers to my questions about bus 608.

As an admin role, I want to create a dataset so that I can answer user questions.

| | A | B | C | D | E | F | G | H | I | J | K |
|----|----|---|--|---|---|---|---|---|---|---|---|
| 1 | Id | Question | Answer | | | | | | | | |
| 2 | 1 | 605 no.'lu Otobüs Hattı'nın durakları nelerdir? | 605 no.'lu Otobüs Hattı'nın durakları ADÜ, Forum Aydın, Zafer Meydanı, Tren Garı ve Otogar'dır. | | | | | | | | |
| 3 | 2 | 605 no.'lu Otobüs Hattı'nın kalkış saatleri nelerdir? | 605 no.'lu Otobüs Hattı'nın kalkış saatleri 6.15, 9.00, 9.45, 12.05, 14.20, 16.50 ve 18.30'dur. | | | | | | | | |
| 4 | 3 | 606 no.'lu Otobüs Hattı'nın durakları nelerdir? | 606 no.'lu Otobüs Hattı'nın durakları, Karpuzlu, Koçarlı, İncirliova, Söke ve Kuşadası'dır. | | | | | | | | |
| 5 | 4 | 606 no.'lu Otobüs Hattı'nın kalkış saatleri nelerdir? | 606 no.'lu Otobüs Hattı'nın kalkış saatleri 6.00, 8.45, 9.30, 11.50, 14.05, 16.35 ve 18.15'dir. | | | | | | | | |
| 6 | 5 | 607 no.'lu Otobüs Hattı'nın durakları nelerdir? | 607 no.'lu Otobüs Hattı'nın durakları, Köşk, Germencik, Efeler, Bozdoğan ve Çine'dir. | | | | | | | | |
| 7 | 6 | 607 no.'lu Otobüs Hattı'nın kalkış saatleri nelerdir? | 607 no.'lu Otobüs Hattı'nın kalkış saatleri 7.30, 10.15, 11.00, 13.20, 15.35, 18.05, 19.45'dir. | | | | | | | | |
| 8 | 7 | 608 no.'lu Otobüs Hattı'nın durakları nelerdir? | 608 no.'lu Otobüs Hattı'nın durakları, Yeni Pazar, Nazilli, Sultan Hisar, Kuyucak ve Karacasu'dur. | | | | | | | | |
| 9 | 8 | 608 no.'lu Otobüs Hattı'nın kalkış saatleri nelerdir? | 608 no.'lu Otobüs Hattı'nın kalkış saatleri 7.20, 8.20, 9.20, 12.20, 14.20, 16.20, 18.20'dir. | | | | | | | | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | | | |

Figure 1. Dataset (MVP 1)

Sprint 2

User Stories

As a user role, I want to ask questions so that I can learn the routes of the bus 605.

As a user role, I want to ask questions so that I can learn about the departure times of bus 605.

As a user role, I want to ask questions so that I can learn the arrival times of the bus 605 at the stops.

As a user role, I want to ask questions so that I can find out the pricing of bus 605.

As a user role, I want to ask questions so that I can learn the routes of the bus 606.

As a user role, I want to ask questions so that I can learn about the departure times of bus 606.

As a user role, I want to ask questions so that I can learn the arrival times of the bus 606 at the stops.

As a user role, I want to ask questions so that I can find out the pricing of bus 606.

As a user role, I want to ask questions so that I can learn the routes of the bus 607.

As a user role, I want to ask questions so that I can learn about the departure times of bus 607.

As a user role, I want to ask questions so that I can learn the arrival times of the bus 607 at the stops.

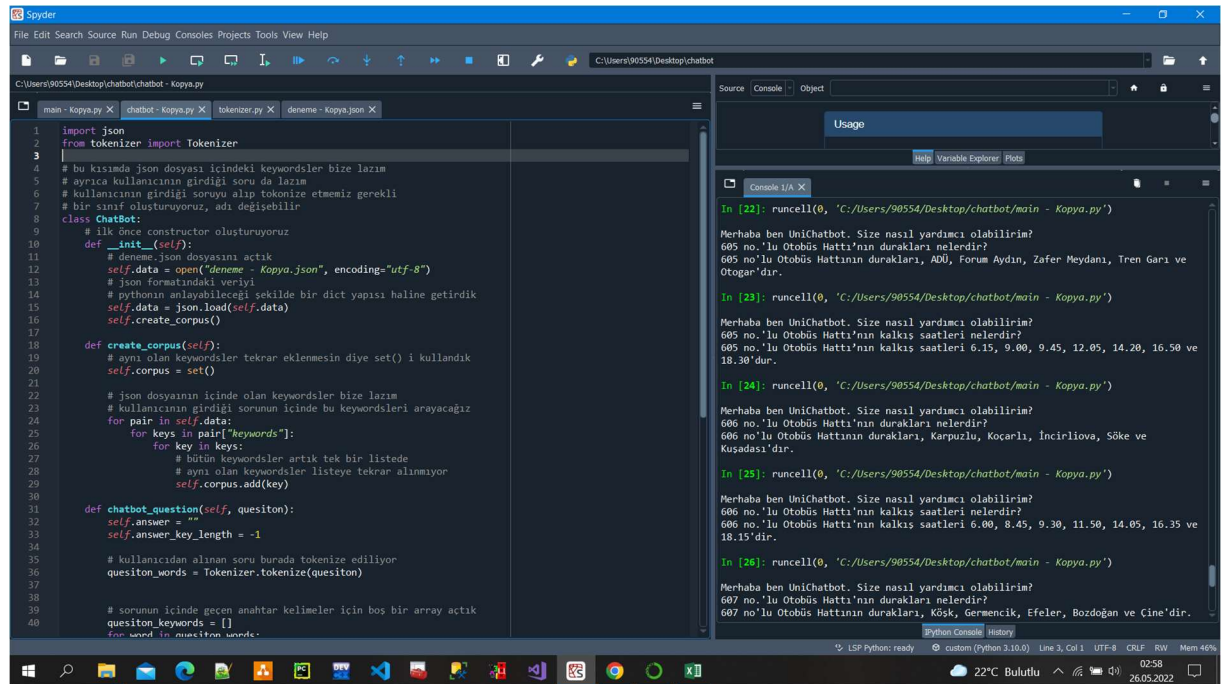
As a user role, I want to ask questions so that I can find out the pricing of bus 607.

As a user role, I want to ask questions so that I can learn the routes of the bus 608.

As a user role, I want to ask questions so that I can learn about the departure times of bus 608.

As a user role, I want to ask questions so that I can learn the arrival times of the bus 608 at the stops.

As a user role, I want to ask questions so that I can find out the pricing of bus 608.



The screenshot shows the Spyder Python IDE interface. The left pane displays a Python script named 'main - Kopya.py' with the following code:

```
1 import json
2 from tokenizer import Tokenizer
3
4 # bu kısımda json dosyası içindeki keywordler bize lazım
5 # ayrıca kullanıcının girdiği soru da lazım
6 # kullanıcının girdiği soruyu alıp tokenize etmemiz gerekli
7 # bir sınıf oluşturuyoruz, adı değişebilir
8 class ChatBot:
9     # ilk önce constructor oluşturuyoruz
10     def __init__(self):
11         # deneme.json dosyasını açtık
12         self.data = open("deneme - Kopya.json", encoding="utf-8")
13         # json formatındaki veriyi
14         # pythonin anlayabileceği şekilde bir dict yapısı haline getirdik
15         self.data = json.load(self.data)
16         self.create_corpus()
17
18     def create_corpus(self):
19         # aynı olan keywordler tekrar eklenmesin diye set() i kullandık
20         self.corpus = set()
21
22         # json dosyasının içinde olan keywordler bize lazım
23         # kullanıcının girdiği sorunun içinde bu keywordleri arayacağız
24         for pair in self.data:
25             for keys in pair["keywords"]:
26                 for key in keys:
27                     # bütün keywordler artık tek bir listede
28                     # aynı olan keywordler listeye tekrar alınmıyor
29                     self.corpus.add(key)
30
31     def chatbot_question(self, question):
32         self.answer = ""
33         self.answer_key_length = -1
34
35         # kullanıcının alınan soru burada tokenize ediliyor
36         question_words = Tokenizer.tokenize(question)
37
38         # sorunun içinde geçen anahtar kelimeler için boş bir array açtık
39         question_keywords = []
40         for word in question_words:
```

The right pane shows the console output with the following interactions:

```
In [22]: runcell(0, 'C:/Users/90554/Desktop/chatbot/main - Kopya.py')
Merhaba ben UniChatbot. Size nasıl yardımcı olabilirim?
605 no.'lu Otobüs Hattı'nın durakları nelerdir?
605 no.'lu Otobüs Hattı'nın durakları, A00, Forum Aydın, Zafer Meydanı, Tren Garı ve Otogar'dır.

In [23]: runcell(0, 'C:/Users/90554/Desktop/chatbot/main - Kopya.py')
Merhaba ben UniChatbot. Size nasıl yardımcı olabilirim?
605 no.'lu Otobüs Hattı'nın kalkış saatleri nelerdir?
605 no.'lu Otobüs Hattı'nın kalkış saatleri 6.15, 9.00, 9.45, 12.05, 14.20, 16.50 ve 18.30'dur.

In [24]: runcell(0, 'C:/Users/90554/Desktop/chatbot/main - Kopya.py')
Merhaba ben UniChatbot. Size nasıl yardımcı olabilirim?
606 no.'lu Otobüs Hattı'nın durakları nelerdir?
606 no.'lu Otobüs Hattı'nın durakları, Karpuzlu, Koçarlı, İncirliova, Söke ve Kuşadası'dır.

In [25]: runcell(0, 'C:/Users/90554/Desktop/chatbot/main - Kopya.py')
Merhaba ben UniChatbot. Size nasıl yardımcı olabilirim?
606 no.'lu Otobüs Hattı'nın kalkış saatleri nelerdir?
606 no.'lu Otobüs Hattı'nın kalkış saatleri 6.00, 8.45, 9.30, 11.50, 14.05, 16.35 ve 18.15'dir.

In [26]: runcell(0, 'C:/Users/90554/Desktop/chatbot/main - Kopya.py')
Merhaba ben UniChatbot. Size nasıl yardımcı olabilirim?
607 no.'lu Otobüs Hattı'nın durakları nelerdir?
607 no.'lu Otobüs Hattı'nın durakları, Köşk, Germencik, Efeler, Bozdoğan ve Çine'dir.
```

Figure 2. Chatbot (ask questions and get answers in writing / MVP 2)

Sprint 3

User Stories

As a user role, I want to ask my question by typing so that I can get an answer to my question about transportation.

As a user role, I want to ask my question by talking so that I can get an answer to my question about transportation.

As a user role, I want to get written answer so that I can get an answer to my question about transportation.

As a user role, I want to get verbal answer so that I can get an answer to my question about transportation.

As an admin role, I want to write test code so that I can be able to test the project.

As an admin role, I want to create an ontology so that I can be able to answer questions that are not in the dataset.

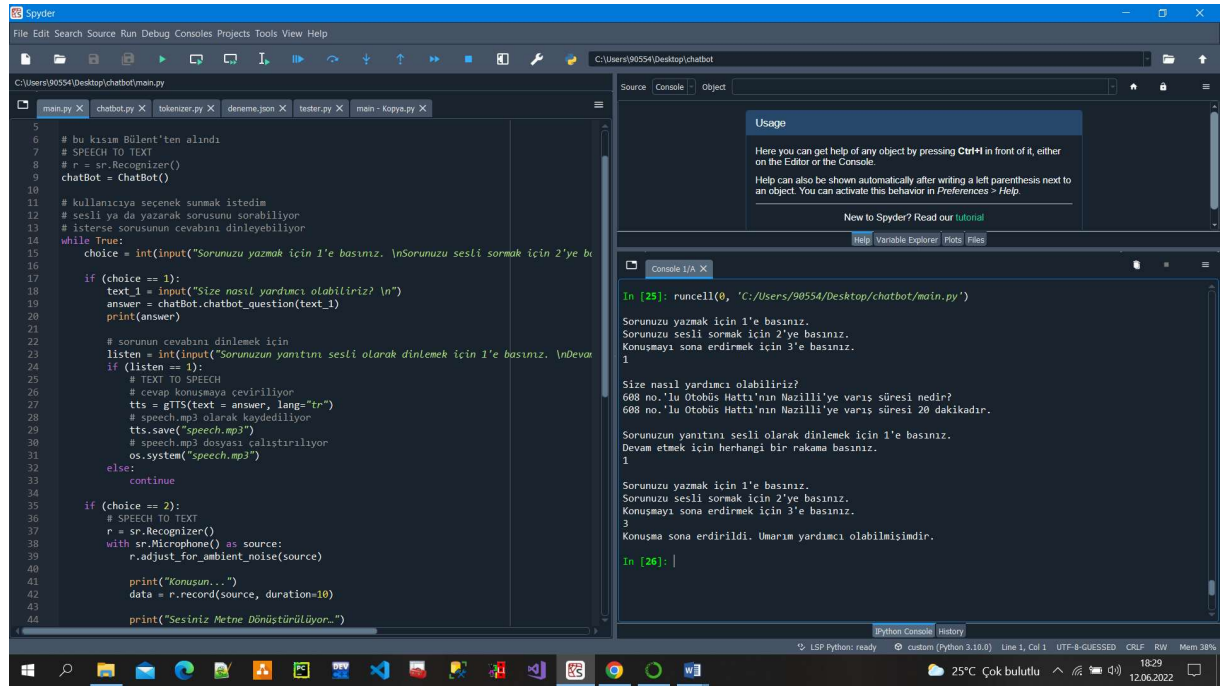


Figure 3. Chatbot (ask questions and get answers verbally / MVP 3 and MVP 4)

Trello: <https://trello.com/b/eB1uijxz/unichatbot>

User Acceptance Test for Sprint 1

| User Story | Purpose / Scenario | Acceptance Criteria | | |
|---|---------------------------------|---|---|--|
| | | Given (Input / Preconditions) | When (Action / Triggers) | Then (Output / Postconditions) |
| As an admin role, I want to create a dataset so that I can answer user questions. | Create a dataset | Decide what questions about buses need to be prepared | Do research on the decided issues | Created a dataset of questions and answers about buses |
| As a user role, I want to ask questions about transportation so that I can get answers to my questions about buses with certain numbers (605, 606, 607, 608). | Answering questions about buses | Prompt user to enter question | If there is a match between the dataset and the question entered, via keyword | Bring the answer to that question |

User Acceptance Test for Sprint 2

| User Story | Purpose / Scenario | Acceptance Criteria | | |
|--|---------------------------------|-------------------------------|---|-----------------------------------|
| | | Given (Input / Preconditions) | When (Action / Triggers) | Then (Output / Postconditions) |
| As a user role, I want to ask questions so that I can learn the routes of the buses 605, 606, 607 and 608. | Answering questions about buses | Prompt user to enter question | If there is a match between the dataset and the question entered, via keyword | Bring the answer to that question |
| As a user role, I want to ask questions so that I can learn about the departure times of buses 605, 606, 607 and 608. | Answering questions about buses | Prompt user to enter question | If there is a match between the dataset and the question entered, via keyword | Bring the answer to that question |
| As a user role, I want to ask questions so that I can learn the arrival times of the buses 605, 606, 607 and 608 at the stops. | Answering questions about buses | Prompt user to enter question | If there is a match between the dataset and the question entered, via keyword | Bring the answer to that question |
| As a user role, I want to ask questions so that I can find out the pricing of buses 605, 606, 607 and 608. | Answering questions about buses | Prompt user to enter question | If there is a match between the dataset and the question entered, via keyword | Bring the answer to that question |

User Acceptance Test for Sprint 3

| User Story | Purpose / Scenario | Acceptance Criteria | | |
|---|--------------------------------|---|---|---|
| | | Given (Input / Preconditions) | When (Action / Triggers) | Then (Output / Postconditions) |
| As a user role, I want to ask my question by typing or talking so that I can get an answer to my question about transportation. | text to speech, speech to text | Prompt user to enter question by typing or talking | If there is a match between the dataset and the question entered, via keyword | Bring the answer to that question |
| As a user role, I want to get written or verbal answer so that I can get an answer to my question about transportation. | text to speech, speech to text | Prompt user to enter question | If there is a match between the dataset and the question entered, via keyword | Bring the written or verbal answer to that question |
| As an admin role, I want to write test code so that I can be able to test the project. | write test code | Get the chatbot's answer to all the questions in the dataset so you can test the chatbot code | Compare these answers with their counterparts in the dataset | Find out what percentage of accuracy the chatbot has |
| As an admin role, I want to create an ontology so that I can be able to answer questions that are not in the dataset. | create and add ontology | Create an ontology so that the chatbot can answer questions that are not in the dataset | Integrate the ontology code into the project | The chatbot answered some questions that weren't in the dataset |