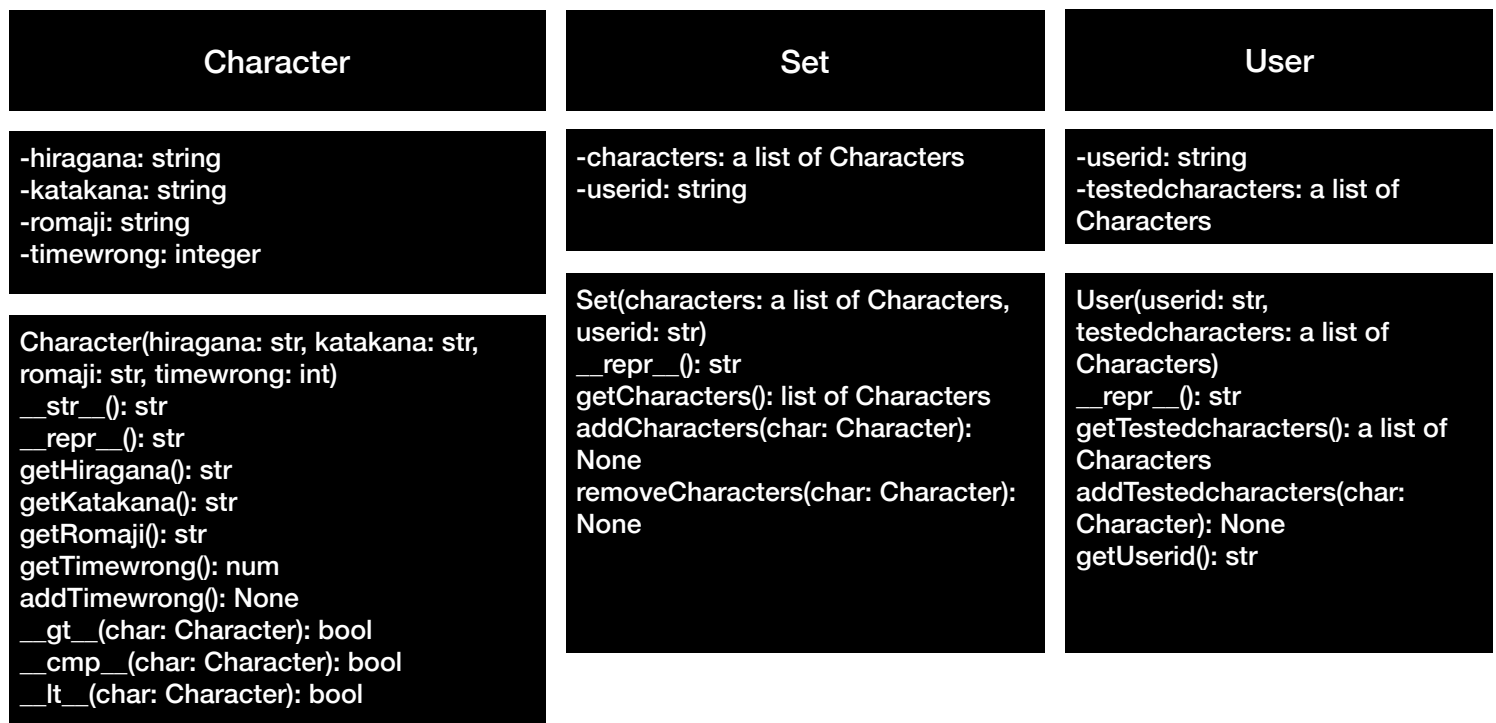In the study of a language, it is important to remember characters and pronunciations in order to read, write, and speak properly. I had the problem of memorizing characters when I first learnt Japanese. Hiragana and Katakana are two forms for one character and they have the same pronunciation, which is Romaji. Therefore, I designed this program of Japanese character pronunciation quiz, which contains 3 modes: hiragana, katakana, or mixed. Once the user put in their username and select the mode, the program will start to test the user by providing 50 questions and let them select the correct romaji (pronunciation) out of 4 choices for the hiragana or katakana depend on modes the user choose. After the test, the user will receive a training log result in an txt file that recorded their performance for them to see which character can they improve in.

There are 3 files, japanese.py, formalpractice.py and Training Log.txt. The japanese file contains classes designed for the test: Character, Set, and User. The formalpractice file import classes from japanese and implement the test, then write into the file called Training Log with the result.

UML diagram:

Character	Set	User
-hiragana: string -katakana: string -romaji: string -timewrong: integer	-characters: a list of Characters -userid: string	-userid: string -testedcharacters: a list of Characters
Character(hiragana: str, katakana: str, romaji: str, timewrong: int) __str__(): str __repr__(): str getHiragana(): str getKatakana(): str getRomaji(): str getTimewrong(): num addTimewrong(): None __gt__(char: Character): bool __cmp__(char: Character): bool __lt__(char: Character): bool	Set(characters: a list of Characters, userid: str) __repr__(): str getCharacters(): list of Characters addCharacters(char: Character): None removeCharacters(char: Character): None	User(userid: str, testedcharacters: a list of Characters) __repr__(): str getTestedcharacters(): a list of Characters addTestedcharacters(char: Character): None getUserid(): str

The code is consisted of 3 major functions. In the main() function, the user is asked to put their name in. A User class will be created using the userid entered. A default Set with the userid and 46 Japanese characters will be created. The local time is assigned to a variable called "t1" and the start time will be assigned to "start". Then user is asked to select the mode of test with a number input of 1, 2 or 3. The other input will be considered invalid and the user will be asked to enter again. Depending on the mode, there are 3 conditions in which only hiragana from the Character in the Set will be tested, or katakana, or a mixed test. For a loop of 50 times, the program will ask the pronunciation of a character's hiragana or katakana. A random selection is made from the characters in Set and displayed to ask for the user's choices. The user will have to choose from 1 to 4 to match the pronunciation to the hiragana or katakana. Her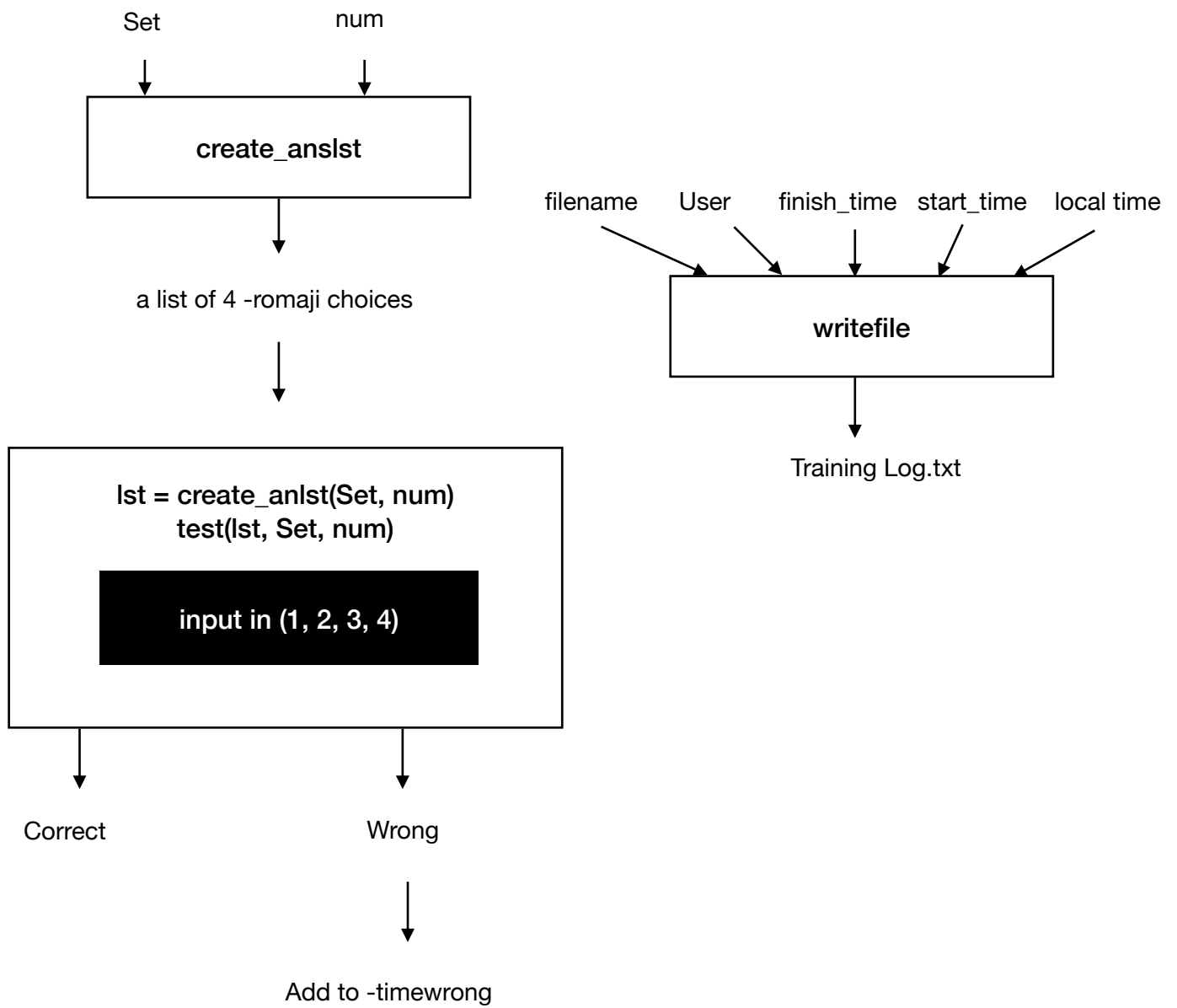e is when the function takes part in. create_anslst() that takes the Set, and the order of random selected Character in the list of characters of Set will create a list with 4 romaji choices from Character in characters of Set. One is the selected Character's romaji, and 3 other are random Character's romaji. The list will then be used in the test() function. This function uses the list, Set, and also the same number generated before. It will print out the list of choices, and then ask the user to choose. The right answer lead to "Correct" output, and wrong answer lead to "Wrong" output with an addition of 1 to the Character's timewrong.

The program will put the Character in the testedcharacters list for User if the Character is not in the list.

After completion of the test, finish time will be assigned to "finish". the program will print the notice of completion and time taken with finish subtracted by start, then it will call writefile() function with filename "Training Log", the User, and the start and finish time recorded along with the local time. The txt file called Training Log will be created if the program runs the first time or written into with local date and time, time taken, the user name, and the characters the user got wrong with the number of times got wrong arranged in descending order.

The graph below is a brief layout of the functions of how they work.

A sample run is also shown below.

Set   num

create_anslst

a list of 4 -romaji choices

lst = create_anlst(Set, num)
test(lst, Set, num)

input in (1, 2, 3, 4)

Correct   Wrong

Add to -timewrong

filename   User   finish_time   start_time   local time

writefile

Training Log.txt

```
Python 3.8.5 (v3.8.5:580fbb018f, Jul 20
2020, 12:11:27)
[Clang 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or
"license()" for more information.
>>>
= RESTART: /Users/Christina/Desktop/fall
2020/CS 150/FInal Project/
formalpractice.py
Japanese Character test by Yuhan Zhou
Please enter your user id: 1
Please choose the mode for practice:
        1: Hiragana
        2: Katakana
        3: Mixed
> 3
The pronunciation of ル is:
1: ru
2: ru
3: nu
4: mu
> 1
Correct!

The pronunciation of に is:
1: e
2: so
3: mo
4: ni
> 2
Wrong. The correct answer is ni

The pronunciation of つ is:
1: tu/tsu
2: ti/chi
3: mi
4: ru
> 3
Wrong. The correct answer is tu/tsu

The pronunciation of ヲ is:
1: re
2: tu/tsu
3: su
4: wo
> 4
Correct!

The pronunciation of ヨ is:
1: re
2: yo
3: o
4: ni
> 1
Wrong. The correct answer is yo

The pronunciation of ム is:
1: ru
2: mu
3: ko
4: ho
> 2
Correct!

The pronunciation of ル is:
1: o
2: ru
3: n
4: ro
> 3
Wrong. The correct answer is ru

The pronunciation of ネ is:
1: ne
2: wa
3: hu/fu
4: he
> 4
Wrong. The correct answer is ne

The pronunciation of ノ is:
1: ta
2: te
3: n
4: no
> 1
Wrong. The correct answer is no

The pronunciation of ユ is:
1: yu
2: wo
3: a
4: ya
> 2
Wrong. The correct answer is yu

The pronunciation of み is:
1: u
2: mi
3: hi
4: e
> 3
Wrong. The correct answer is mi

The pronunciation of エ is:
1: e
2: re
3: mi
4: mu

> 4
Wrong. The correct answer is e

The pronunciation of あ is:
1: so
2: a
3: si/shi
4: n
> 1
Wrong. The correct answer is a

The pronunciation of い is:
1: ro
2: mi
3: ra
4: i
> 2
Wrong. The correct answer is i

The pronunciation of の is:
1: ho
2: no
3: ki
4: no
> 3
Wrong. The correct answer is no

The pronunciation of お is:
1: me
2: mo
3: o
4: mu
> 4
Wrong. The correct answer is o

The pronunciation of ラ is:
1: ni
2: ki
3: ne
4: ra
> 1
Wrong. The correct answer is ra

The pronunciation of え is:
1: hi
2: e
3: mo
4: te
> 2
Correct!

The pronunciation of ん is:
1: he
2: ru
3: n
4: na
> 3
Correct!

The pronunciation of と is:
1: mo
2: mu
3: a
4: to
> 4
Correct!

The pronunciation of く is:
1: wo
2: ku
3: tu/tsu
4: yu
> 1
Wrong. The correct answer is ku

The pronunciation of れ is:
1: re
2: hi
3: so
4: ha
> 2
Wrong. The correct answer is re

The pronunciation of エ is:
1: to
2: ka
3: e
4: ya
> 3
Correct!

The pronunciation of オ is:
1: ko
2: se
3: o
4: ki
> 4
Wrong. The correct answer is o

The pronunciation of な is:
1: ha
2: n
3: na
4: a
> 1
Wrong. The correct answer is na

The pronunciation of コ is:
1: ko

2: yu
3: na
4: to
> 2
Wrong. The correct answer is ko

The pronunciation of ソ is:
1: i
2: hi
3: so
4: wo
> 3
Correct!

The pronunciation of ワ is:
1: yu
2: wa
3: ma
4: so
> 4
Wrong. The correct answer is wa

The pronunciation of ワ is:
1: mu
2: wa
3: no
4: me
> 1
Wrong. The correct answer is wa

The pronunciation of ゆ is:
1: o
2: yu
3: no
4: yu
> 2
Correct!

The pronunciation of ユ is:
1: yu
2: mi
3: o
4: ka
> 3
Wrong. The correct answer is yu

The pronunciation of い is:
1: hi
2: to
3: ni
4: i
> 4
Correct!

The pronunciation of メ is:
1: ra
2: ni
3: me
4: ne
> 1
Wrong. The correct answer is me

The pronunciation of め is:
1: ki
2: me
3: me
4: te
> 2
Correct!

The pronunciation of つ is:
1: tu/tsu
2: te
3: re
4: ra
> 3
Wrong. The correct answer is tu/tsu

The pronunciation of き is:
1: me
2: te
3: ma
4: ki
> 4
Correct!

The pronunciation of コ is:
1: te
2: yo
3: na
4: ko
> 1
Wrong. The correct answer is ko

The pronunciation of ト is:
1: to
2: ta
3: so
4: to
> 2
Wrong. The correct answer is to

The pronunciation of ミ is:
1: so
2: tu/tsu
3: mi
4: me
> 3
Correct!

2: yu
3: na
4: to
> 2
Wrong. The correct answer is ko

The pronunciation of ヤ is:
1: wa
2: ra
3: te
4: ya
> 4
Correct!

The pronunciation of ミ is:
1: no
2: mi
3: wo
4: ku
> 1
Wrong. The correct answer is mi

The pronunciation of ラ is:
1: me
2: o
3: ra
4: mu
> 2
Wrong. The correct answer is ra

The pronunciation of を is:
1: wo
2: ki
3: te
4: nu
> 3
Wrong. The correct answer is wo

The pronunciation of サ is:
1: se
2: ri
3: sa
4: a
> 4
Wrong. The correct answer is sa

The pronunciation of ル is:
1: na
2: ru
3: sa
4: te
> 1
Wrong. The correct answer is ru

The pronunciation of ろ is:
1: ma
2: ro
3: a
4: re
> 2
Correct!

The pronunciation of キ is:
1: se
2: ki
3: me
4: ke
> 3
Wrong. The correct answer is ki

The pronunciation of サ is:
1: ta
2: yu
3: sa
4: he
> 4
Wrong. The correct answer is sa

The pronunciation of ろ is:
1: si/shi
2: ro
3: tu/tsu
4: mo
> 1
Wrong. The correct answer is ro

The pronunciation of う is:
1: ro
2: ko
3: u
4: ku
> 2
Wrong. The correct answer is u


Congratualtion! You have completed one
test!
Time taken：62.18 sec


>>>
```

```
● ● ●                          📄 Training Log
2020-12-04-22 10:27
1
The character you got wrong:
る，ル，ru        2 times
つ，ツ，tu/tsu    2 times
の，ノ，no        2 times
ゆ，ユ，yu        2 times
み，ミ，mi        2 times
お，オ，o         2 times
ら，ラ，ra        2 times
こ，コ，ko        2 times
わ，ワ，wa        2 times
さ，サ，sa        2 times
に，ニ，ni        1 times
を，ヲ，wo        1 times
よ，ヨ，yo        1 times
ね，ネ，ne        1 times
え，エ，e         1 times
あ，ア，a         1 times
い，イ，i         1 times
と，ト，to        1 times
く，ク，ku        1 times
れ，レ，re        1 times
な，ナ，na        1 times
め，メ，me        1 times
き，キ，ki        1 times
ろ，ロ，ro        1 times
う，ウ，u         1 times
Time taken: 62.18 sec
```

Conclusion:

The process of learning and memorizing always involve repetition. Therefore, repeating every time until become fluent needs a lot of exercise. The user should be able to review the log in the file to see their improvement and where they can still work on more. In terms of Japanese, the pronunciation is very important, so the user should be listening and practicing to fully get the environment of language learning. This program is designed to help accelerate this process.