

Homework 5 — Madame Maxine's Fortune Palace

Due Tuesday October 16th, 11:55pm

(50 points)

Objectives:

- Understand how return statements work and how to use functions with returns
- Understand how to implement a simple decision using an if statement.
- Understand how to implement a two-way decision using an if/else statement.
- Understand how to implement a multi-way decision using an if/elif/else statement.
- Understand the concept of boolean expressions and the boolean data type.
- Be able to read, write, and implement algorithms that employ decision structures, including those that employ sequences of decisions and nested decision structures.

Turn In:

- `hw5_fortuneteller.ipynb`

You should turn this file in on moodle under the "Homework 5 - Fortune Teller" link.

Instructions:

Your job is to write a fortune-telling program. You will be writing a program that when run will give the user information about their future by reading their palm. Your program should be nicely broken down into functions as described in this document.

The fortune telling program works as following: after printing out a greeting, it prompts the user for today's date.

Using this information, it determines whether what line on the user's hand to read. If today's date is between the 1st and the 9th (inclusive), it reads the user's life line. If today's date is between the 10th and the 19th (inclusive), it reads the user's heartline. If today's date is between the 20th and the 29th (inclusive), it prompts the user for their birth month and reads the user's head line. If today's date is the 30th or the 31st, the program declares today to be a bad day for fortune telling. Once the program has told the user's fortune, it says goodbye and exits. Note that the program only reads **one** of the user's life, heart, or head lines.

Feel free to do as much (or as little) research as you want into palmistry to complete the sentences in your program! Where ever we have written **[FILL ME IN]**, you have complete creative freedom.

Your program *must* include the following functions:

- `get_question_answer_int`: this function should take one parameter, a prompt to give to the input function and **return** the user's answer to the question as an int.
- `likes_[FILL ME IN]`: this function should prompt the user about whether or not they like something of your choosing and **return** a boolean value. True if the user likes the thing that you have asked them about, False otherwise. Note that this function should be



case insensitive. If the user answers "yes", "YES", "yES", "yes", or any other variations of "yes", your function should return True. If they answer anything that is not "yes" (case insensitive), your function should return False.

Name this function so that it corresponds to what you are asking the user about!

- **read_lifeline:** this function should take one argument as a parameter, the user's answer from the `likes_` function. Using this, it should read the user's life line in the following manner: if the user likes the thing that you asked them about they have a long, deep life line. If the user doesn't like that thing, they have a forked and branching lifeline.
 - Output:
 - Long, deep line: "You have a long, deep life line. **[FILL ME IN]**"
 - Forked and branching: "Your life line is forked and branching. **[FILL ME IN]**"
- **read_heartline:** this function should take two arguments, today's date and the number of people they have talked to so far today. Using these, the fortune teller will read the user's heartline based on the difference of today and the number of people the user has talked to. If there is no difference, the user's heartline is the perfect example of long. If the difference is less than -10 or greater than 10, the user's line is faint. Otherwise, the user has a very deep heartline.
 - Output:
 - Perfect example of long: "Your heartline is the perfect example of long. **[FILL ME IN]**"
 - Faint: "You have a faint heartline. **[FILL ME IN]**"
 - Very deep: "The deepness of your heartline will **[FILL ME IN]**"
- **read_headline:** this function should take two arguments, the user's birthday and the user's birth month. If the user was born on the ides of March (March 15th), report that the crosses in their headline don't bode well. Otherwise, if the user was born in the month with the same number as their birthday (e.g. April 4th), their head line is deep and wavy. If the previous conditions weren't met and the user's birth month and birthday have the same parity (both even or both odd), their line is branched and upwards. In all other cases, the headline should be reported as branched.
 - Output:
 - Crosses: "I'm afraid the crosses that I see here **[FILL ME IN]**"
 - Deep and wavy: "The deep and wavy line here shows **[FILL ME IN]**"
 - Branched and upwards: "The branched and upwards line here shows **[FILL ME IN]**"
 - Branched: "The branched line here shows **[FILL ME IN]**"

Your program *may additionally include* any other functions that are appropriate. Remember, the main function of your program should read like a table of contents.

You may assume that the user will only enter valid input in the accepted ranges. You may assume that the user will not enter days that do not exist (e.g. the 67th day of the month or the -1st month of the year). You may assume that the user will only enter "yes" or "no" for the question about spicy food.



Below is one example output of the program. User input is shown **underlined in bold**. Your program should **exactly reproduce** the output shown below **except where explicitly marked**. Notice that not all questions are always asked (for instance, a user is only asked how many people they talked to today if today's date is between 10 and 19).

See the full list of example outputs at the end of this document.

Example output (user input <u>underlined in bold</u>)
<pre>Welcome to Madame Maxine's Fortune Palace. Here, we gaze deeply into your soul and find the secrets that only destiny has heretofore known! The power of my inner eye clouds my ability to keep track of mundane things like the date. Tell me, what day of the month is it today: <u>11</u> Your future is affected by the people you see. Tell me, how many people have you talked to today: <u>11</u> I will now read your heartline. Your heartline is the perfect example of long. <i>[FILL ME IN]</i> These insights into your future are not to be enjoyed or dreaded, they simply come to pass. Good day.</pre>

As a reference, our solution, including comments and empty lines, is about 130 lines long.

Output & Testing:

It is your responsibility to test your program. You can use the quiz that we have provided on moodle to compare the output of your program to some of the example outputs. If your program output does not exactly match the files we provide, you will not receive full credit.

Development:

Your code should always be in a “runnable” state. Do not attempt to develop your entire program without running it.

- 1) Start by writing your main function. How will you get information from the user about what day of the month it is? Run your program. Does it do what you expect?
- 2) Next, how will you do different things depending on the day of the month. Try using simple print() statements to make sure your logic is correct.
- 3) Next, try writing your functions that return information. Test them, make sure that what they are giving you back is correct.
- 4) Finally, write the functions that read the user's lifeline, headline, and heartline. Do not write them all at the same time. Write one, test it, make sure it is correct, then move on.



5) Lastly, test your code and compare your output to the files that we provide.

Comments (3 points)

Your code must be commented. You must include a file comment (your name, your section, the homework name, and a brief description of what the program does), inline comments (explaining any complex code), and function comments. An example function comment is shown below:

```
# This function converts a temperature in fahrenheit to celsius
# and prints the equivalence.
# Parameters: fahrenheit - int or float degrees fahrenheit
# Return: float - equivalent degrees celsius
def fahrenheit_to_celsius(fahrenheit):
    celsius = (fahrenheit - 32) * (5/9)
    return celsius
```

Style & Structure (7 points)

Naming (1 point)

- Your variable names should be meaningful and concise
- Your variable names should be formatted like: `user_birthday` (words start with lowercase letters and are separated with underscores)
- Function names should be formatted the same way as your variables: `get_today()` (words start with lowercase letters and are separated with underscores)

Proper Variable Usage (1 point)

- You should not have variables outside of functions.

Functions (5 points)

- You **must** have a `main` function. The only code in your program that is not inside a function should be a single call to `main()`. Your main function may contain: function calls, control statements (`if/elif/else`), and `print` statements. Remember to include your `if __name__ == "__main__":` statement!
- All non-main functions **must** be defined at the zero indentation level, as in the example lecture code. Do not attempt to define a function inside another function.

Extra Credit (+5 Points)

You may earn up to 5 points in extra credit by adjusting your program to read the user's fortune in the case that today's date is the 31st. You can choose what happens in this case. Your adjustments should not change the behaviour of the program for days that are not the 31st. You may prompt the user for more input, you may use `if/else` statements, loops, you can add functions; basically you can do what you want, but you must continue to follow the commenting, style, and structure guidelines.



To receive maximum extra credit, you must add at least as much functionality for the 31st that the headline, heartline, and lifeline have. You must accurately comment what your added functionality does and how it acts in each different case.

Full list of possible outputs

User input is shown **underlined in bold**. Your program should **exactly reproduce** the output shown below **except for the question about what the user likes**. Notice that not all questions are always asked (for instance, a user is only asked how many people they talked to today if today's date is between 10 and 19).

Example output (user input <u>underlined in bold</u>)
Life Line
<p>Welcome to Madame Maxine's Fortune Palace. Here, we gaze deeply into your soul and find the secrets that only destiny has heretofore known!</p> <p>The power of my inner eye clouds my ability to keep track of mundane things like the date.</p> <p>Tell me, what day of the month is it today: <u>2</u></p> <p>One more question before we begin. Do you like <u>[FILL ME IN]</u>? (yes or no) <u>Yes</u> I will now read your lifeline. You have a long, deep life line. <u>[FILL ME IN]</u></p> <p>These insights into your future are not to be enjoyed or dreaded, they simply come to pass. Good day.</p>
<p>Welcome to Madame Maxine's Fortune Palace. Here, we gaze deeply into your soul and find the secrets that only destiny has heretofore known!</p> <p>The power of my inner eye clouds my ability to keep track of mundane things like the date.</p> <p>Tell me, what day of the month is it today: <u>2</u></p> <p>One more question before we begin. Do you like <u>[FILL ME IN]</u>? (yes or no) <u>no</u> I will now read your lifeline. Your life line is forked and branching. <u>[FILL ME IN]</u></p> <p>These insights into your future are not to be enjoyed or dreaded, they simply come to pass. Good day.</p>
Heart Line
<p>Welcome to Madame Maxine's Fortune Palace. Here, we gaze deeply into your soul and find the</p>



secrets that only destiny has heretofore known!

The power of my inner eye clouds my ability to keep track of mundane things like the date.

Tell me, what day of the month is it today: **11**

Your future is affected by the people you see.

Tell me, how many people have you talked to today: **11**

I will now read your heartline.

Your heartline is the perfect example of long. **[FILL ME IN]**

These insights into your future are not to be enjoyed or dreaded, they simply come to pass.

Good day.

Welcome to Madame Maxine's Fortune Palace.

Here, we gaze deeply into your soul and find the secrets that only destiny has heretofore known!

The power of my inner eye clouds my ability to keep track of mundane things like the date.

Tell me, what day of the month is it today: **13**

Tell me, how many people have you talked to today: **2**

I will now read your heartline.

You have a faint line. **[FILL ME IN]**

These insights into your future are not to be enjoyed or dreaded, they simply come to pass.

Good day.

Welcome to Madame Maxine's Fortune Palace.

Here, we gaze deeply into your soul and find the secrets that only destiny has heretofore known!

The power of my inner eye clouds my ability to keep track of mundane things like the date.

Tell me, what day of the month is it today: **17**

Tell me, how many people have you talked to today: **27**

I will now read your heartline.

The deepness of your heartline will **[FILL ME IN]**

These insights into your future are not to be enjoyed or dreaded, they simply come to pass.

Good day.

Head Line

Welcome to Madame Maxine's Fortune Palace.

Here, we gaze deeply into your soul and find the secrets that only destiny has heretofore known!

The power of my inner eye clouds my ability to keep track of mundane things like the date.

Tell me, what day of the month is it today: **21**



Numerology is vitally important to fortune telling.
Tell me, what day of the month were you born on: **15**
I need one last piece of information.
Tell me, what month were you born in: **3**
I will now read your headline.
I'm afraid the crosses that I see here **[FILL ME IN]**

These insights into your future are not to be enjoyed or dreaded,
they simply come to pass.
Good day.

Welcome to Madame Maxine's Fortune Palace.
Here, we gaze deeply into your soul and find the
secrets that only destiny has heretofore known!

The power of my inner eye clouds my ability to keep
track of mundane things like the date.

Tell me, what day of the month is it today: **20**

Numerology is vitally important to fortune telling.
Tell me, what day of the month were you born on: **4**
I need one last piece of information.
Tell me, what month were you born in: **4**
I will now read your headline.
The deep and wavy line here shows **[FILL ME IN]**

These insights into your future are not to be enjoyed or dreaded,
they simply come to pass.
Good day.

Welcome to Madame Maxine's Fortune Palace.
Here, we gaze deeply into your soul and find the
secrets that only destiny has heretofore known!

The power of my inner eye clouds my ability to keep
track of mundane things like the date.

Tell me, what day of the month is it today: **23**

Numerology is vitally important to fortune telling.
Tell me, what day of the month were you born on: **17**
I need one last piece of information.
Tell me, what month were you born in: **11**
I will now read your headline.
The branched and upwards line here shows **[FILL ME IN]**

These insights into your future are not to be enjoyed or dreaded,
they simply come to pass.
Good day.

Welcome to Madame Maxine's Fortune Palace.
Here, we gaze deeply into your soul and find the
secrets that only destiny has heretofore known!

The power of my inner eye clouds my ability to keep
track of mundane things like the date.

Tell me, what day of the month is it today: **24**



Numerology is vitally important to fortune telling.
Tell me, what day of the month were you born on: **2**
I need one last piece of information.
Tell me, what month were you born in: **7**
I will now read your headline.
The branched line here shows **[FILL ME IN]**

These insights into your future are not to be enjoyed or dreaded,
they simply come to pass.
Good day.

Bad day

Welcome to Madame Maxine's Fortune Palace.
Here, we gaze deeply into your soul and find the
secrets that only destiny has heretofore known!

The power of my inner eye clouds my ability to keep
track of mundane things like the date.

Tell me, what day of the month is it today: **30**

Today is a bad day for fortune telling.

These insights into your future are not to be enjoyed or dreaded,
they simply come to pass.
Good day.

