Problem Solving Steps

Program Assignment #3

**Problem #1**

* The first program was simply three different functions that will print my rocket in three different stage and each function represent a stage, I used ASCII Art to do this and it was only multiple print statements. My function explain:
  1. Stage one is when my rocket is on the ground
  2. Stage two is when I lunched my rocket and you can see the flame fire start getting out of it.
  3. Stage three is when my rocket is going to the moon and you could see there are many smokes and fire flame from my rocket at this stage.

**Problem #2**

* The second part of the assignment is simply a program that will stores bunch of information, same as required in the instructions. So the program it will run and ask the user about how many people will be entering? So let’s user put input for 2 people as an example then my program will create a **Dictionary** that will store 2 people/person inside my dictionary which I called “people”. Next step is asking the user for more information and it requires certain format and use a method to filter these data in before I even add it to the dictionary.
* My program will ask the user for their first name, last name, age, occupation, and their physical address. Now I have to run a loop for each question as we can see in my code which I used “While True” which will break in one condition! It will break whenever the data is valid if not it will ask the user to re enter the information again because the data is invalid or in the wrong format.
  1. First question: Asking the user for the first’ person name then I will send this variable(string) to my function which I created which tell me if my data is Valid or NOT
     + After that function received the data it will see if the first name contains any numbers by running a loop for that string so I can be able to read character by character and then use isDigit function which is a built in function in Python will return true or false! True if there is latter or string is a number. So we’re going character by character like what I said previously, and if YES then return True and tell the user that input is INVALID input and they have to try it again, if the user successfully enter a valid data it will break this WHILTE TRUE loop and it will jump to the next question.
     + In the next question is the same exact thing just used for string to store my user’ last name input.
     + Now the third question it will store the age and as the requirements is saying the age supposed to be no less than 0 and no more than 150 which I used an if statement to do that, but if the user enter this input successfully I have to break this loop and go the next question.
     + The next question which I’m storing the occupation as string and I have to make sure the string has no numbers which I will use my NotVALID function to check that again, but if the user enter this input successfully I have to break this loop and go the next question.
     + The last question which is the address which is going to be string but I have to make sure that user will not an enter a fake address or just numbers or a city name which is going be only string! So I created a function to check if the address is valid or not. After taking the user input “address” as string I have to send it to that function notAddress(address) which I will pass my string to that function, and then used regular expression to filter this out and make sure my address it will have NUMBERS, STREET NAME, TYPE OF STREET, AND THEN CITY NAME, STATE, AND ZIP CODE IF IT EXIST, either way, for example:
       - 1234 Street\_Name Street
       - 1234 Street\_Name Street, City\_Name, State\_Name, ZIP Code

I used the following “\d{1,3}.?\d{0,3}\s[a-zA-Z]{2,30}\s[a-zA-Z]{2,15}”

then after that I have to compile my pattern so I could use it later for match (TRUE/FLASE) so after I declared my regex pattern and compiled it, I have to use match() which according to the python documentation will go through the string and if zero or more characters at the beginning of string match my regular expression will return TRUE else FALSE (NOT match)

Sources I used:

* + - * match(): [https://docs.python.org/3/library/re.html#re.Pattern.match](https://docs.python.org/3/library/re.html" \l "re.Pattern.match)
      * re.compile(): [https://docs.python.org/3/library/re.html#re.compile](https://docs.python.org/3/library/re.html" \l "re.compile)
      * Also my regex experssion got it from the regex library which I searched for US Street Address, or address pattern: https://regexlib.com/

then if the input is valid then break this 1/TRUE loop and go to the next step which will take all these information and send it to my dictionary which works like map, has key and value which made it easier for me.

* + - Finally loop through my people dictionary and print each key with it value included the format that was on our instructions.

**Problem #3**

* Part 3 is creating a program that will has a function that converts a string to a 32 bit integer, with some rules in it.
* Input from the user has to be filtered out from alphabetical letters, symbols such as double quotes “ also removing whitespaces.
* I used in this part a regex again and what I did I used re.sub which will replace any alphabetical letters, white spaces, double quotes with BLANK which basically is removing it.
* I asked the user to put a string input and then send it my function myAtoi.
* MyAtoi is a function that will use regular expression and used re.sub to remove the elements that I don’t need, then it will return the value.
* If the value is positive and out of 32 bit the program will return the value 2\*31-1
* If the value is negative and out of 32 bit it will return 2\*31
* else just return the value after removing the white spaces, double quotes, and any letters.