UNIVERSITI SAINS MALAYSIA

MSc of Business Analytics

Data Programming and Predictive Analytics for Business (ABW505D)

“Python Random Password Generator Report”

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Algorithm Development

1.

1. Greeting the User.
2. Identify the variables you will use
3. Create function
4. Ask the user for input for the password length and must be a number.
5. Validate input length must be not less than 8 or more than 16 and the type of input must be integer.
6. Ask user for password requirements if he needs upper case in the password
7. Ask user for password requirements if he needs lower case in the password
8. Ask the user for password requirements if he needs symbols in the password
9. Ask the user for password requirements if he needs digits in the password
10. Validate the inputs must be answered only by “y” or “n” or the program will be closed.
11. Loop on the selected characters to generate the password
12. Ensure randomization
13. Generate a random password using requirements given by the user from the list created
14. Shuffle password for extra randomization
15. Print password to the user

Flowchart

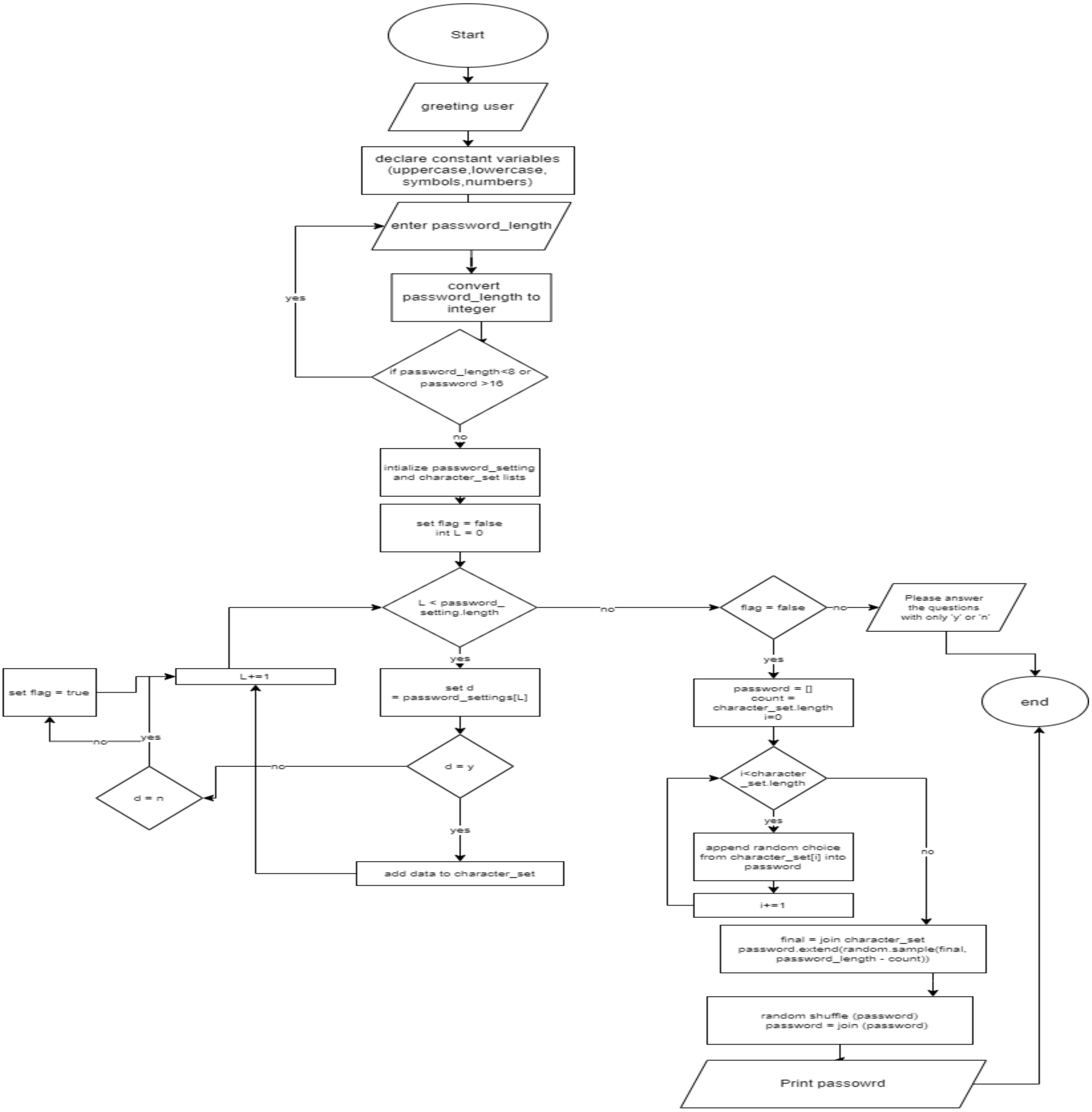

Start
greeting user
declare constant variables (uppercase,lowercase, symbols,numbers)
enter password_length
convert password_length to integer
if password_length<8 or password >16
yes
no
intialize password_setting and character_set lists
set flag = false
int L = 0
L < password_ setting.length
yes
no
set d = password_settings[L]
d = y
yes
no
add data to character_set
L+=1
d = n
yes
no
set flag = true
flag = false
no
yes
Please answer the questions with only 'y' or 'n'
end
password = []
count = character_set.length
i=0
i<character _set.length
yes
no
append random choice from character_set[i] into password
i+=1
final = join character_set
password.extend(random.sample(final, password_length - count))
random shuffle (password)
password = join (password)
Print passowrd

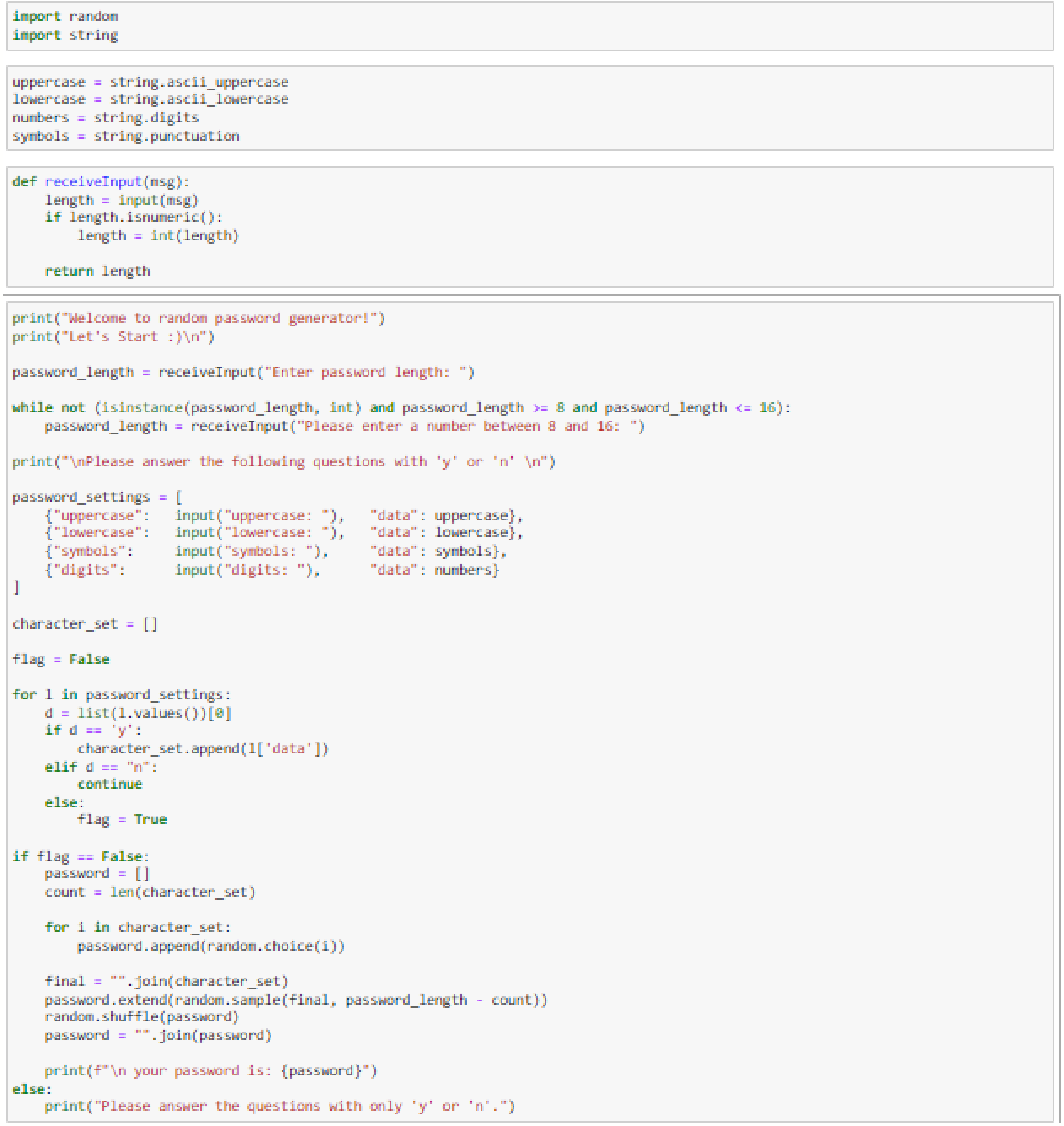
fig.1 program flowchart

Pseudocode

```
BEGIN
Display Greetings
DEFINE receiveInput function
    IF length is numeric THEN
        SET type of length to integer
    RETURN length
CALL function receiveInput (“Enter password length: ”)
SET password_length the receiveInput return
WHILE not type of length is int and password_length >= 8 and password_length <= 16
    CALL function receiveInput (“Please enter a number between 8 and 16:”)
    SET password_length the receiveInput return
ENDWHILE
DISPLAY Answer the following questions with 'y' or 'n'
SET password_settings = [ {"uppercase": input("uppercase: "), "data": uppercase},
 {"lowercase": input("lowercase: "), "data": lowercase},
 {"symbols": input("symbols: "), "data": symbols},
 {"digits": input("digits: "), "data": numbers}]
SET character_set as an empty list
SET flag = False
FOR each l in password_settings
    SET d = list(l.values())[0]
    IF d equal to "y" THEN
```

```
INCREMENT character_set WITH data from dictionary values
ELSE IF d == "n"
continue
ELSE
 flag = True
IF flag == False
SET password as an empty list
SET counter = length of character_set
FOR each i in character_set
INCREMENT password with random choice of i
SET final = "".join(character_set)
ADD to password random sample FROM final AND the COMPUTED of ( password_length - count)
 INIT random.shuffle(password)
 SET password = "".join(password)
 DISPLAY the password
ELSE
DISPLAY Please answer the questions with only 'y' or 'n'.
ENDIF
END
```

Coding

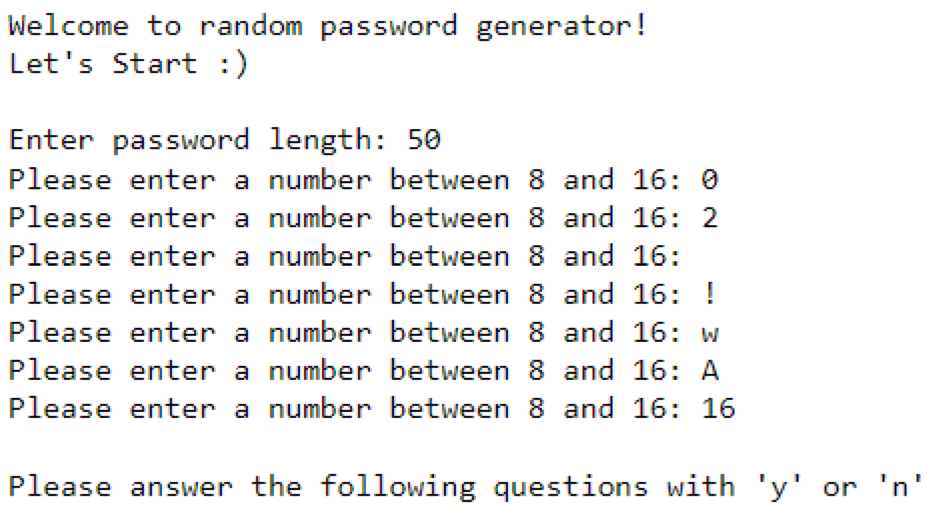


```
import random
import string
```

```
uppercase = string.ascii_uppercase
lowercase = string.ascii_lowercase
numbers = string.digits
symbols = string.punctuation
```

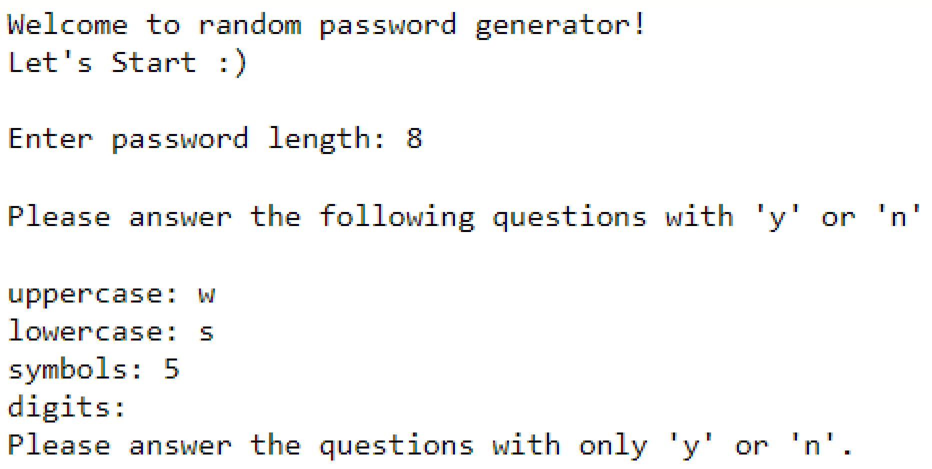
```
def receiveInput(msg):
    length = input(msg)
    if length.isnumeric():
        length = int(length)

    return length
```

```
print("Welcome to random password generator!")
print("Let's Start :)\n")

password_length = receiveInput("Enter password length: ")

while not (isinstance(password_length, int) and password_length >= 8 and password_length <= 16):
    password_length = receiveInput("Please enter a number between 8 and 16: ")

print("\nPlease answer the following questions with 'y' or 'n' \n")

password_settings = [
    {"uppercase":   input("uppercase: "),   "data": uppercase},
    {"lowercase":   input("lowercase: "),   "data": lowercase},
    {"symbols":     input("symbols: "),     "data": symbols},
    {"digits":      input("digits: "),      "data": numbers}
]

character_set = []

flag = False

for l in password_settings:
    d = list(l.values())[0]
    if d == 'y':
        character_set.append(l['data'])
    elif d == "n":
        continue
    else:
        flag = True

if flag == False:
    password = []
    count = len(character_set)

    for i in character_set:
        password.append(random.choice(i))

    final = "".join(character_set)
    password.extend(random.sample(final, password_length - count))
    random.shuffle(password)
    password = "".join(password)

    print(f"\n your password is: {password}")
else:
    print("Please answer the questions with only 'y' or 'n'.")
```



```
Welcome to random password generator!
Let's Start :)

Enter password length: 50
Please enter a number between 8 and 16: 0
Please enter a number between 8 and 16: 2
Please enter a number between 8 and 16:
Please enter a number between 8 and 16: !
Please enter a number between 8 and 16: w
Please enter a number between 8 and 16: A
Please enter a number between 8 and 16: 16

Please answer the following questions with 'y' or 'n'
```

Fig. 2 program's output



```
Welcome to random password generator!
Let's Start :)

Enter password length: 8

Please answer the following questions with 'y' or 'n'

uppercase: w
lowercase: s
symbols: 5
digits:
Please answer the questions with only 'y' or 'n'.
```

Fig. 3 program's output

Code Notebook

Link:https://colab.research.google.com/drive/13I8udmj5j72a7lz04DG02SBV0eX0hAAO?usp=sharing

Conclusion (What I have learned)

- Being familiar with random Module like how to use random shuffle or the different between random sample (can't duplicate the element) and random choice (can duplicate the element)
- Being familiar with string Module like the string asci, digits, punctuation and even string (capwords) and I didn't use it but I learned this function too while I'm doing this Assignment.
- I can make the values of keys in dictionary as an input (be more familiar with dictionary).
- How to create a advanced password generator Using python.
- How to Write algorithm development.
- How to create flowchart.
- How to write a pseudocode.
- How to handle error using is numeric.
- How to convert from dictionary to list and list to string.
- How to use Booleans to help you to get what you want (insistence).