CS125 Introduction to Data Analysis for Social Sciences
Summer 2021 Midterm Exam
Duration: 100 minutes

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1) **(40 points)** Write a python script, `yourname_q1.py`, that inputs a string containing a GTIN-8 barcode number for a commercial item. The barcode will have 8 digits in total (e.g. 86901235, where the first three digits will indicate country code and the last digit is the checksum digit.

Your program should determine whether the barcode number given is an item for a company registered in Turkey or not, and check if the checksum digit entered is correct. The country code for Turkey is 868 or 869.

The checksum is calculated by following these steps:
Using the first 7 digits of the barcode (e.g. 8690123 from the above example),

- Sum all digits in odd positions (**8**6**9**0**1**2**3** ➔ s1 = 8 + 9 + 1 + 3 = 21)
- Sum all digits in even positions and multiply by 3 (8**6**9**0**1**2**3 ➔ s2 = (6 + 0 + 2) x 3 = 24).
- Add both results together (s3 = s1 + s2 = 21 + 24 = 45) and take the modulus/remainder of this number by 10 (s4 = s3 % 10 = 5).
- If this digit (s4) is equal to zero then checksum is zero. Otherwise checksum is s4 subtracted from 10 (checksum = 10 – 5 = 5).

***** DO NOT USE A LOOP*****

Sample Runs:

```
Enter a GTIN-8 barcode: 86901235
This is an item of a company registered in Turkey.
Check digit is correct

Enter a GTIN-8 barcode: 97811117
This is an item of a company registered elsewhere.
Check digit is faulty. It should be: 4

Enter a GTIN-8 barcode: 86822220
This is an item of a company registered in Turkey.
Check digit is correct
```

2) **(30 points)** Write a python script, `yourname_q2.py`, that inputs 5 words from the user, adds them to a list and does the following:

- Generate a random integer number between 1-5.
- Display the corresponding word in the list (e.g. if the random number is 3, display the third word entered.)

Hint: you should `import` the `random` module and use the `randint()` function.

Sample Runs:

```
Enter a word: first
Enter a word: second
Enter a word: third
Enter a word: FOURTH
Enter a word: fifTH
Displaying word # 3 : third
```

```
Enter a word: this
Enter a word: is
Enter a word: cs125
Enter a word: midterm
Enter a word: exam
Displaying word # 5 : exam
```

3) (30 points) Write a python script, `yourname_q3.py`, that keeps track of people's birthdays, where the information can later be retrieved based on their name. Your script should do the following:

a. Create a dictionary of names as keys and birthdays as values associated with the keys, using the data given in the table below:

Name	**Birthday**
Albert Einstein	03/14/1879
Sky Brown	07/12/2008
Ada Lovelace	12/10/1815
Rudy Huxtable	06/14/2016
Rowan Atkinson	01/06/1955
Stephen Hawking	01/08/1942

b. Determine whether each person in the dictionary is an adult or a child. Add this information to each dictionary entry by creating a tuple with the person's birthday and adult/child status (e.g. 'Albert Einstein': ('03/14/1879', 'adult')). Update each dictionary entry to associate each key with these tuples. Note: People 18 and over should be considered as adults. Check by birth year.

c. When you run your program it should ask the user to enter a name, and return the birthday of that person back to them. If the person is not found in the dictionary, display an appropriate message.

Sample Run 1:

```
Whose birthday do you want to look up?
Stephen Hawking
Stephen Hawking's birthday is 01/08/1942
```

Sample Run 2:

```
Whose birthday do you want to look up?
Alan Turing
Sadly, we don't have Alan Turing 's birthday.
```