Thursday Nov 14, 2024

In-class Handout

COSC 101C Intro to Computing I

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Name:

Discuss and complete the following questions with the person nearest you. You **may** be asked to share your thoughts with the class.

1. Write a function called **hundreds_chart** that produces the following output

```
  1   2   3   4   5   6   7   8   9  10
 11  12  13  14  15  16  17  18  19  20
 21  22  23  24  25  26  27  28  29  30
 31  32  33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48  49  50
 51  52  53  54  55  56  57  58  59  60
 61  62  63  64  65  66  67  68  69  70
 71  72  73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88  89  90
 91  92  93  94  95  96  97  98  99 100
```

You can use the following helper function to help you align all of the numbers:

```
def print_num_right_align(num:int) -> None:
    num = str(num)
    pad = 4 - len(num)
    print((" " * pad) + num, end="")
```

2. Write a function called **multiplication_table** that takes a positive integer and outputs a multiplication chart from 1 through that number. For example multiplication_table(5) should produce:

```
     |   1   2   3   4   5
-----+--------------------
   1 |   1   2   3   4   5
   2 |   2   4   6   8  10
   3 |   3   6   9  12  15
   4 |   4   8  12  16  20
   5 |   5  10  15  20  25
```

Again, use the print_num_right_align helper function to help you align all of the numbers.

3. Write a program that asks users about their pets. You should create a data structure that encodes the information you've gotten from users. Below is an example of asking users for the information.

```
What's your name?  forrest
What type of animal is your pet?  cat
What is your cat's name?  fig
Do you have more pets [y/n]?  y
What type of animal is your pet?  cat
What is your cat's name?  bella
Do you have more pets [y/n]?  n
Are there more users [y/n]?  y
What's your name?  irene
What type of animal is your pet?  rabbit
What is your rabbit's name?  rabbit
Do you have more pets [y/n]?  n
Are there more users [y/n]?  n
```

4. What is the output of the following code snippet?

```
import random
def func(aDict: dict) -> None:
    for i in range(15):
        aDict[i] = random.randint(0, 15)

def bar(aDict: dict) -> None:
    for i in range(10, 24, 2):
        aDict[i] = random.randint(0, 15)

def main() -> None:
    d = {}
    func(d)
    bar(d)
    print(len(d))
main()
```

5. **Challenge**: Write a function that returns a list of all the ngrams of any size in a string. A ngram is a grouping of n words based on their occurrence in a sentence. For example, imagine you have the sentence *the cat is out of the bag*, for the size 1 your function would return:

   [‘the’, ‘cat’, ‘is’, ‘out’, ‘of’, ‘the’, ‘bag’]

For size 3, your function would return:

```
['the cat is', 'cat is out', 'is out of', 'out of the', 'of the bag']
```