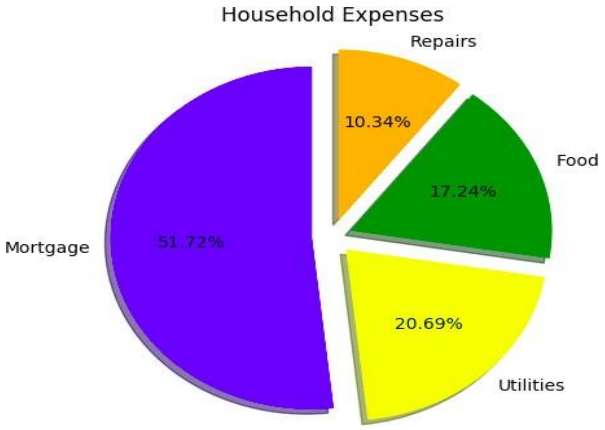
TASKS

- Use NumPy library and perform following tasks:

  1. Initialize 2 arrays and add their contents.
  2. Multiply all contents within one of the above arrays by an integer.
  3. Reshape one of the arrays to be 2D (if existing array is 2D, make it 3D).
  4. Convert One of the arrays to be of a different Data type.
  5. Generate a sequence of numbers in the form of a NumPy array from 0 to 100 with gaps of 2 numbers, for example: 0, 2, 4 ....
  6. From 2 NumPy arrays, extract the indexes in which the elements in the 2 arrays match.

- Use Matplotlib and perform following tasks:

  1. Create a line chart consisting of 2 separate lines each having a label of its own and one of them styled in a doted manner. Also add labels to the axes.
  2. Create a Pie Chart similar to the one given below. You can use dataset and colors of your own, but make sure that the structure is followed as is.



- Use pandas to create a new data frame consisting of 3 series and save it to a CSV file named 'TestSheet.csv'. Once created, retrieve data from the same file, make changes to it and add another series and save the new data frame to the existing file. See the sample below for how your data should look like.

	Duration	Pulse	Maxpulse	Calories
0	60	110	130	409.1
1	60	117	145	479
2	60	103	135	340
3	45	109	175	282.4
4	45	117	148	406

- Perform the following tasks with NLTK.

  1. Write a Python NLTK program to split the text sentence/paragraph into a list of words. Sample Below.

```
Original string:
Joe waited for the train. The train was late. Mary and Samantha took the bus. I looked for Mary and Sama

Sentence-tokenized copy in a list:
['Joe waited for the train.', 'The train was late.', 'Mary and Samantha took the bus.', 'I looked for Ma

Read the list:
Joe waited for the train.
The train was late.
Mary and Samantha took the bus.
I looked for Mary and Samantha at the bus station.
```

2. Write a Python NLTK program to create a list of words from a given string.

```
Original string:
Joe waited for the train. The train was late. Mary and Samantha took the bus. I looked for Mary and Sama

List of words:
['Joe', 'waited', 'for', 'the', 'train', '.', 'The', 'train', 'was', 'late', '.', 'Mary', 'and', 'Samant
```

3. Write a Python NLTK program to tokenize words, sentence wise.

```
Original string:
Joe waited for the train. The train was late. Mary and Samantha took the bus. I looked for Mary and Sam

Tokenize words sentence wise:

Read the list:
['Joe', 'waited', 'for', 'the', 'train', '.']
['The', 'train', 'was', 'late', '.']
['Mary', 'and', 'Samantha', 'took', 'the', 'bus', '.']
['I', 'looked', 'for', 'Mary', 'and', 'Samantha', 'at', 'the', 'bus', 'station', '.']
```

- Use Spacy to perform the following tasks.
    1. Create a syntactic dependency visualizer for a given sentence.
    2. Break a given sentence into tokens each representing a single word.