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Subject - AI ML Assignment 1.3

1. A data structure is a specialized format for organizing, processing, retrieving and storing data. There are several basic and advanced types of data structures, all designed to arrange data to suit a specific purpose. Examples of data structures include array,linked list,stacks,queue etc.

The real life applications of data structures include :-

1. Arrays are used to store data in tabular form
2. Images are linked with each other. So, an image viewer software uses a linked list to view the previous and the next images using the previous and next buttons.
3. Most internet processes and requests use queue.

3)Friends = [‘Ram’, ‘Shyam’, ‘Aryan’, ‘Priya’, ‘Madhuri’]

There are several inbuilt methods of list data type in python and the use of them is given in the table below which was found using help() function in Python.

|  |  |
| --- | --- |
| **Method** | **Description** |
| [append()](https://www.w3schools.com/python/ref_list_append.asp) | Adds an element at the end of the list |
| [clear()](https://www.w3schools.com/python/ref_list_clear.asp) | Removes all the elements from the list |
| [copy()](https://www.w3schools.com/python/ref_list_copy.asp) | Returns a copy of the list |
| [count()](https://www.w3schools.com/python/ref_list_count.asp) | Returns the number of elements with the specified value |
| [extend()](https://www.w3schools.com/python/ref_list_extend.asp) | Add the elements of a list (or any iterable), to the end of the current list |
| [index()](https://www.w3schools.com/python/ref_list_index.asp) | Returns the index of the first element with the specified value |
| [insert()](https://www.w3schools.com/python/ref_list_insert.asp) | Adds an element at the specified position |
| [pop()](https://www.w3schools.com/python/ref_list_pop.asp) | Removes the element at the specified position |
| [remove()](https://www.w3schools.com/python/ref_list_remove.asp) | Removes the first item with the specified value |
| [reverse()](https://www.w3schools.com/python/ref_list_reverse.asp) | Reverses the order of the list |
| [sort()](https://www.w3schools.com/python/ref_list_sort.asp) | Sorts the list |

4)An ordered collection means that the elements of the collection have a specific order. The order is independent of the value. A List is an example. A sorted/unordered collection means that not only does the collection have order, but the order depends on the value of the element.

1. The types of each value in python are given below :-

1. 100 is of integer data type
2. 105.5 is of float data type
3. 192.56 j is of imaginary data type
4. 10 + 6j is of imaginary data type
5. ‘10’ is of string data type
6. ‘Hello world’5 is of invalid data type
7. [10,20,50,100] is of list data type
8. {‘name’: ‘sachin’, ‘age’: 24, ‘language’: ‘python’} is of dictionary data type