**Task 2**

Text

Description automatically generatedAs mentioned, dynamic typing helps to write general purpose methods, which reduce code redundancy. Like in the example below, method *addition* can be used for both strings types and integers. As long as both x and y given same type of input, method will not give error. But the problem arises when programmer give different types of input for x and y, it will generate Type Error.

Another advantage of dynamic type is as mentioned mixed data structures. For example, lists in python allows to store mixed types. In particular example, list can have various object types.

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There it does not have particular advantage, but it can used in a way to store multiple objects of different types but have same parent object. For example, imagine we have class vehicle and subclasses Car, Bus, Bicycle:

Graphical user interface, application

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We can use one list to store all types and manipulate together:Graphical user interface, text, application

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Such ability gives polymorphism.

**Task 4**

Duck typing makes code convenient by removing need for type casting that is required in static typing. For example below code shows how *comer* object that can be either *Player* type or *Goblin* type. So as long as there is right methods for each objects, there no need to type cast the objects for their respective types, but required in static typing. Because both have name getter method, comer.name is valid call for comer object. While in Java, special instanceof function need to be used.

A screenshot of a computer

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Interact\_with method of Trap.py

Text

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interactWith method of Trap.java

Same we can see in Volcano object. Occ object`s methods are called without typecasting here in contrast to type casting in Java version

Text

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Act method of Volcano.py

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Act method of Volcano.java

Another good example how duck typing make code shorter and easier to read in Cell object.

There are a lot of type checking and type casting in the Java example which make code longer, while python code is short and straightforward.

Text

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Java Example Python example