Can Python have functional programming feature?

Introduction

Research has been done on Python programming language to check if functional programming can be implemented in python. Functional programming is a model build by applying and composing function. With functional programming, many side effects and bugs can be avoided which makes it easier to debug and test, which leads it to be more convenient to formal verification [1].

With functional programming, looping can be avoided along with its side effects which means no more out of index error. No runtime errors will be seen [3]. As programmers can avoid seeing these errors, they can code more confidently.

Research document is going to show how python supports function programming with merge sorting.

Merge Sort

Competitive analysis

First python and ELM which is known for being restricted to purely functional programming is compared. ELM only allows functional programming. Any kind loops cannot be used in ELM.

Merge sort in ELM is done by containing a function which will split list into two. Next function merges two previously halved list into one list in a sorted way. Following function uses previous two functions. First it does recursion through list by splitting it in halves until it has one element then it merges them in sorted way.

Merge sort in python is closely similar if not better version. Benefits of python is it comes with already implemented functions [2] that can be use in arrays. Programmers do not have to have an entire function just to split. Python has function which can take first half and second half of list which results to shorter codes with same functional programming.

Product review

After reviewing python, few conclusions about python are made. Python is more flexible to use which means it provides more freedom than ELM. Programmers do not have to assign type to any variable. Therefore, variable can be anything even if programmer wants to change it midway. As previously mentioned, python comes with already implemented functions for arrays with decrease code quantity having same quality

Freedom comes with some disadvantages. Sometimes if programmer have a variable assigned and in midway if programmer want to change value of variable but misspelled the variable then it is going to create new variable. It results to previous variable remained unchanged and a new variable.

Conclusion from merge sort

ELM restricts programmer by having purely functional programming platform. Whereas python provides freedom to programmers. Each language provides similar results when it comes to functional programming. Python would be preferred more if programmer is in favor of freedom. ELM would be preferred if programmer wants pure functional programming.

Conclusion

According to the documentation, it can be concluded that python can be functional. Its library and already implemented functions allows it to be functional. If those functionalities are taken away, python is unable to be functional programming language.

References

[1] Hudak, Paul (September 1989). "Conception, evolution, and application of functional programming languages" (PDF). ACM Computing Surveys.

[2] "About Python". Python Software Foundation. Archived from the original on 20 April 2012. Retrieved 24 April 2012., second section "Fans of Python use the phrase "batteries included" to describe the standard library, which covers everything from asynchronous processing to zip files."

[3] "Elm home page".