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CMPSCI 4250-E01
Homework 1

1. The connection between readability and overall simplicity of a programming language:

Readability is one of the most important criteria for judging a programming language is the ease with which programs can be read and understood. The overall simplicity of a programming language strongly affects its readability. Two potential example are as follow:

- Multiplicity of ways of doing the same thing is generally bad. For example, in Java, a user can increment a simple integer variable in four different ways:

```
count = count + 1
```

```
count += 1
```

```
count++
```

```
++count
```

- Operator overloading can be trouble, in which a single operator symbol has more than one meaning. For example:

“4” * 5 = “44444” or 20 or error?

[5,6,1]+[1,3,4] = [6,9,5] or [5,6,1,1,3,4] or 20 ?

2. The common properties of the most versions of Ada and COBOL are:

- . Ada and COBOL are high level languages but COBOL is highly High Level language than Ada.
- . Both Languages supported Object-oriented programming language.
- . The future versions of these languages support the programs written in these languages, which is very beneficial for the user.
- . Both languages are frequently used for the applications but not user friendly.
- . Both languages are not so good for beginners.
- . They both were popularized by the department of Defense.

3. The operators in C that were modeled on similar operators in ALGOL 60 are:

- . Its assigning operators
- . Its treatment of pointer
- . **for** and **switch** statements in C are influenced by ALGOL 60.

5. Scripting languages gained more popularity with the explosion of World Wide Web during 1990's. Scripting languages are mainly used for developing web pages which are interpreted by the web browsers.

- . Javascript appeared in 1994 developed by Netscape replaced the traditional static arrays. All the character strings and arrays were of having dynamic lengths. So array indices are not checked for validity.
- . In 1995, PHP included the dynamic array properties of arrays from JSP and hashes from Perl. Hashes are advanced form of array. In an array, each element can be accessed by the index, but sometimes this becomes extremely difficult as the index itself is not known. The hash solves this problem by allowing programmers to access the elements in array not by an index, but by a scalar key.
- . In the year 1996, Ruby was a completely object oriented scripting language. Ruby's arrays are mutable arrays and are dynamically resizable. All the operations to the array are done through method.
- . Python which came into existence in 2004 used three types of data structure instead of arrays. It uses lists, tuples and dictionaries. The objects in lists can be referenced by their positions and objects cannot be altered. The objects in tuples can be referenced by their positions and can be altered. Dictionaries are hashes where objects are referenced by key values and are mutable.

4. Table of major developed languages

Major developments	Year of development	First appeared language	
Concepts of block structure	1960	ALGOL 60	
First high level language construct for macros	1959	COBOL 60	
Timesharing	1971	Basic	

Concurrently executed subprograms	1960	PL/I	
User-defined data types	1968	ALGOL 68	
Dynamic typing	1995	PHP	