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A is a set of rules that assigns a property called type to the various constructs of a computer program such as -

Type System

Type is a set of value and an operation of those value. eg. character, string, Integer...

Type system:-

A well defined system of associative types with variables and expression in the language.

Statically type:- means that the type of every expression can be determined at compile time. JAVA, C, ~~ML~~ ML, HASKELL etc are the example of statically type languages.

Dg Each variable has a single type throughout the life time of that variable at run time.

Dynamically type:- The types of expressions here are not ~~more~~ known until at run time. Usually, the type of the variable can changed dynamically during execution of that program. eg. Rubi, Python, smalltalk.

Attribute & Terms:-

Name :- It is a representation of a variable denoted by identifiers or somesibles

Binding :- It is a association b/w two things it involves the name and the thing that in same it needs.

discuss
decision

Scope of the binding :- It is the part of the program during which the binding is active.

Binding time :- It is the point at which the binding is created. Or in other words, the point at which any implementation decision is made.

//C ex. for name :- we can use unlimited length, we use special symbols, we can't use space b/w variable name. Special character underscore (-) are used but not at first.

//Fortran 1 maximum length = 6.
//COBOL maximum length = 30.

//ANSIC maximum length = 31.

//Fortran 90 maximum length = 31.

//JAVA no limit

//PDA and // no limit

Under score character (-) // allowed by
C, C++, perl
(connector character)

//FORTRAN 77 → It allows the space b/w variable name.

Case sensitivity: - C, C++, JAVA.

special word: - In C we use keyword so these keywords are special words. But many languages do not have.

5/4/19

Polymorphic function and Recursive function
Recursive Function: -

Recursion is present, where the function is defined in terms of itself
eg. factorial program in C

$$5! = 5 \times 4 \times 3 \times 2 \times 1$$

$$5 \times 4!$$

$$4 \times 3!$$

$$3 \times 2!$$

$$2 \times 1!$$

1

The generic expression for factorial using recursion can be written as $n! = n \times (n-1)!$

assumption $n > 1$

one name multiple forms

Polymorphic Function: - One name multiple forms.

eg. mul(int, int);
mul(int, int, int);
mul(float, float);

In polymorphic function no. of variable and type of variable may be different.

of variable

Abstract Data Type :- A data type is characterized by a set of values, a data representation common to all these values and the set of operations to be applied uniformly to all the values. An abstract data type is a set of values and the operations that can be applied uniformly through all these values.

To abstract means to leave out the information keeping only that which is important.

A data structure is simply a way of organizing a value that consists of multiple parts. The concepts of data structures include the implementation part while abstract data type consist only of the possible values and the operations to be perform.

Higher order function and ~~Curried~~ Curried function

The functions which takes atleast one function as an parameter or returns a function as its results or performs both is called Higher Order functions.

Many languages like JAVA SCRIPT, GO, HASKELL, PYTHON, C++, C# etc support higher order function.

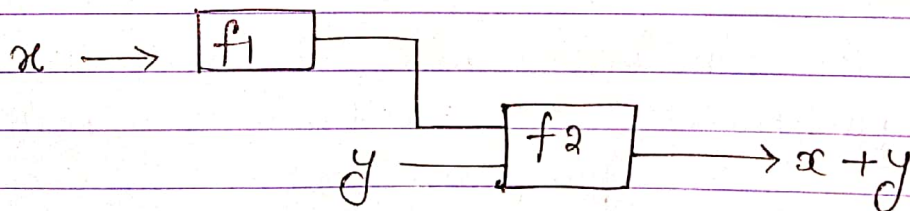
It is ~~so~~ important to in function programming. ^{eg. Code (write)}

Curried Function:- Function can be classified as binary function that is those that have two input and unary function that have single input.

In HASKELL ~~of~~ every function can have single input only, hence functions in HASKELL are called unary.

Hence, functions in HASKELL are called curried function as the used methodology called curried.

Currying involves translating the information & evaluation of a function that takes multiple argument into evaluating a sequence of the function, each with the single argument.



x will be input to the function f_1 which returns the function called f_2 . Function f_2 takes a number y and add its x . The final output will be $x + y$.

The method of writing was proposed by the scientist HASKELL CURRIE ~~at~~ to also implemented the language HASKELL.

UNIT-5

GUI

① Graphical User Interface

② High speed computers are required as that are expensive.

③ GUI is not linked to the computer itself. It linked through O.S. or the program.

④ The user controls the flow of action.

⑤ We are allowed to work using any pointing device like mouse.

⑥ User interacts with Applications with the use of graphics.

⑦ Multiple tasks can be run simultaneously.

GUI

① Character User Interface

② It is cheaper as compare to GUI.

③ It can be linked directly.

④ The programmer controls the flow of action.

⑤ We are allowed to work using a keyboard.

⑥ User interacts with applications with use of code.

⑦ Can run only one task at a time.