September 8,2021 Java + DSA Bootsomp * Lecture 1: Intro 1 to programming Memory Management Types of larges, #1. Types of larges !-Object - Vriented - Knocedural -functions 7 serial structuring only funs i e never 7 levalues around 7 Contoins Systematic objects La code file + data order of statements, Modify Pareables, but fu & commands. 7 used for diff operations 7 Custom dotatypes are specify using on same data set -> first class fune I If we carreassign Formed group Ru name with other of properties of hers Instance of this Runs as well like varia. -bles then its called first class fun class is object. en-python & first was 17 ex class 7 human functions but not Purely Jural 1) Codefile properties en relies 4 data 17 defect in no se etc

7 Divided code in dill "churks to make it easier to devel depug, reuse & mintain Software. #2. Statie 4/2 Dynamic languages -Lynamic larguages Static longuages 2) Perform type checking = 1) Perform type checking at compile-time. Cui - Machine automatically compilation => converting of source decide datatype after compilation readable cade all at based on the value that is given to a Variable. en- Machine required you to specify datatype of variables
before compilation
en'- inta = 10 x b;
String c = "Tejas", d; Cui- a = 10; Il marrire Knowl automatically that it is integer after compilation Means, you don't need to specify datatype before compilation.

- 2) Errors well show at compile time. en : int a = "Tejas"; 'code decent compile and gives clower that you can't store string to integer.
- 4.) In static language state
 you can't stolere, string to integer variable and combination like this en-inta=10; a= 1'Kunal"; 11 Error at compile-time a = a + 10 ! // also gilles error
- 5.) More control 11 Runtine errors are reduced. Il More Lime in writing Whe.

2.) Error night not show till Program is run.

- 3.) belare satatype before 3.) Ne need to declare datatype of variables
 - 4.) In dynamic you can store and supporte any variable do other dolatypes. a = " Kural"; because of dypanic property & reference variables (discussed later)
 - 5.) Saves time while writing code but mig night give estror at runtine

*#3.) Memory Management - in Memory Management!

There are 2 types of Memory; 1) Stack Memory 2) Heap Memory Proposits -> for int a = 10; datatype name Address Stores reference int a A4101
Stock
Memory Hemory Note; In case of dynamic larguages datatype column is not there in stack memory that is why we can assign any type of values physics in any variable and also update them with diff datatype values unlike static larguages en; In static, belone case is not allowed but in dynamic it is allowed. 1 name Address 1 a A4281 1 a A4101 present ["Tajos"]

previously [10]

ATIOI

#4.) Some Important properties of Memory: 1) More than one reference variables can point to the same object! en; name = "Tejas"; friend -I some object Son brother baby Multiple Reference 2) It any one of those reference variables change the object, then original object is going to be changed and going to be changed for all.

Mother said so, i. e

out - Suppose in above example, It Tejas change dothes then all can see the lene clothes even when change done by 2nd reference variable i'e son

This tepic is Important coe java only has pass by reference realize during for parameters and we do both pass by value I pass by reference using pass by reference using pass by reference value. Note: We discuss Mutability & Unmutability later #5.) Garbage Collection: If an object with no reprene variable (means no reference variable is pointing toward a particular object), then it will altomatically removed from memory when garbage collection hits. it hits automatically Note; ble car see later, that How to perform Some sunctions when grande collection hits his Object - Oventled programming. 4 There is finalize et concepts...