☆Communicative English.

16th Oct 2024.

C++

→ mysql, php, linux, Apache. = freeware App Development.
→ java + oracle/~~mysql~~ L-server = for International App & enterprise
→ Data structure: Apply on any programming language
→ ☑ DSA in C
→ ☑ DSA in Java → more features and diverse.

Java DSA (industry requirement).

C has low lv. h/w based so used in DSA by the scientific purposes for OS and its Drivers / H/w intensive tasks like game - are made in C++ / Java / Python.

→ C++ has many limitation.
→ Java is more flexible than C++.

preprocessor directive:

Works: Before start the process (during compiling). before compilation perform the tasks; we write entire program utilises very no. of objects / functions that belong to certain library.
So if we don't include that library file compiler will not recognise it.
To utilise system defined functions / objects are in library of C++. in the form of groups and each group is represented by a headerfile until and unless, we don't mention it, compiler will not recognise them.
preprocessor director will include headerfile and make it the part of program before compilation such that during compilation no trouble.
all th and obj get identified.
Headerfile has fn prototyping and objects.
pre processor directive removes all the comments line from the program.

purpose: All input & output objects
[cin → Keyboard input & info lie in
cout → screen output
iostream.

Getline is a system defined fn which detail is present in the String.h for the valid translation.

for math ops. we will add math.h.
The preprocessor helps content to add from header file to make the size of the program big.

Namespace = logical collection / package (Java) has similar classes as one unit.
using namespace std; //standard namespace.

class: Blueprint; the variables give the property/attribute. to manipulate value of variables, we have functions.
console: control, Keyboard, CPU.
↳ cout is connected to monitor.
<< -> inserter operator; insert to cout to display content on display
↳ cin is the input by keyboard. >> -> is extractor operator; extract keyboard input; store to the variable in class.

cin >> roll; memory buffer full by input no.
cin.ignore(); memory buffer to free.
fflush(stdin) -> C to free memory buffer

Input(NO -> string) is sequence then after input no. then do cin.ignore(); inorder to take string input.

Getline is in string.h getline(cin, variable name);
to take string input including space characters.
endl = endline; to break the output in next line
\n is escape sequence of C also used in C++.

class { -> open curly braces
} -> closing curly braces
}; -> class end indication.
class keyword (reserved word) helps make class.
class member = 4 variable + 2 function = 6 members
we can only use class member after make object of that class. Direct member access by private is not allowed. Only public member can be accessed.
we can access private variable via public function. That has secured access instruction.

main function ( ) we make class's object there. The entry point of the program. class cannot run without main fn. class is container for variable and function.

C++

Date: 21/10/24.

- overall structure of C++ program.
- 2 thing: Class and the main fn in the program:

Student.cpp overall program has 2 parts.

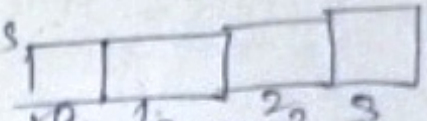
execution of program from main fn.

[class.

[main fn.

Array of objects

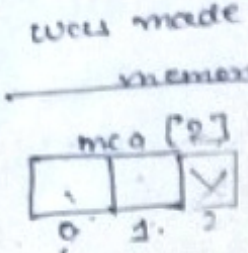
Student mca[3];



In the computer memory an

was made of mca.

memory



Data store in variable.

To manipulate / print data we use function.

Variables set private due to data is stored (important).

eg. creditcard no/ name / exp-date / cvv is confidential data, to prevent unwanted access set as private.

functions set as public.

mca[0].input()

- var 1 roll
- var 2 name
- var 3 add
- var 4 marks

mca[1].input

- var1 roll
- var2 name
- var3 add
- var4 marks.

Public:

Copy of variables was made for seperate objects.

Shop

member data: var: medicine : is private

member func: func: salesman: is public

- make bill
- take money
- give medicine.

Variables in private block. If by default all declare is private.

get(cin, ~~var~~ add)

Implementation

H/w intensive: C

H/w intensive with OOrientation: C++.

AI/ML: python, lang.

Each programming lang. has set of features.

Java op. code has the byte code make it OS independent Java work on diverse device.

To use fn, we include the header file

cin has limitation, for multiple words suitable func. is getline( ) i.e in the string.h.

and cin and cout is part of iostream. headerfile.

using namespace std; std = standard namespace.

.using : To use.
namespace is logical collection where set of class, objects
fn. can be made.
If we use it in program, it becomes part of the program.
we use namespace in C#. C++ C→C++
C# micr.

[namespace
int x] both can have variable of same name.
main()
✓ int x=10;
✓ int x=30;
[namespace
int x ✓

High level code convert to low lv code at runtime.
Machine has 5 gen, So the programming lang. has the
5 levels.

Latest version of C++ : C20/C++20.
from 1979 - to 2018.

· Structure of Object oriented program.
1) Header file
2) namespace standard (not in C)
3) Class Declaration.
→ Access modifier (private & public & protected).
→ Data members (variables).
→ member function (function inside class). pub
int main().
4) Main function (int return type).
→ make object of class (object declaration).
eg. Calculator add;
→ Object through member function accessed.
add. addition ( ); Cannot write private member
gcc.
5) Return statement;

A program can have many classes.

/* multi
line
comment */

//——

namespace provide area where we define identifier (name of the variable and the function, class, structure and union) made by user

It is is avoid name conflict as unique name can be identifier.
name of var
class st-union.

Q Diff btw C & C++
next class.
till page: 54 and
next 20 pages.

23.10.24 C++.

Monthly Assement Review Quiz (objective) Test.

Task: fair work (need to make) from study material provided.

Difference between C and C++.

1. C: It is procedural prog. due to sequence of execution in the main fn.

C++: It is procedural and also object oriented.

paradigm: The way to program

2. C: Dennis Richi

C++: Barne Stourstrup.

3. C: Assembly lang. based

C++: C++ lang based.

4. C: Abs, Encaps. Inher. poly. not support in C (OOPS)

C++: C++ supports all.

5. C: Operator Overloading (x)

C++: Supported:

All operators [+ → add
→ additional responsibility
to add 2 words.]. Additional work is given to overload any operator. Its called operator overloading.

Java: Operator Overloading is in + and += only. C++ : unary, binary, relational operator is overloading

6 C: 32 Keywords

C++: Total 95 keywords in lodest version. ranges from 62-95.

7. C: has no concept of constructor & Destructor

C++ has; python has both of it, java has only constructor.

8. As object is created, then all its variables get initialised by predefined values. It is a specialised fuction. The name of class is Identified as the function name. It runs automatically if the object of that Specific class is made.

8 The constructor function has no return type.
Any particular task is also performed.
Destructor: Constructor will initialise all variables.
when we terminate our application and set the variables
to initialise to previous state is called Destructor.
The name is same. ~ (Tilde Symbol near Esc btn).
~classname() is destructor.

eg class Student {
// place ob class variables.
Student()
{ // initialise class variables

}
~student() {
// to reset the values of
// class variables / remove from memory
// clean from memory

}
};

✓ new Keyword: makes object

✓ delete Keyword removes object.

✓ java has no destructor. The Garbage collector part of jvm will destroy the object.

✓ C++ has no feature of garbage collector so manually need to free memory:

class fn: Party roomsetup.
party(){
class got dirty;
}.
destructor{
clean dirt return classroom;
}.

10. C: Top Down Approach
Break and write.
C++: Combine Solution and write.

11. C: malloc, calloc, realloc.
C++: new and delete.
[Run Time Memory Allocation].

12. C: stdio.h
C++: iostream.h
] header file.

9. Exception handling
C: not present
C++: Has exc. handling. Java has exc. handling
occur at runtime. Exception will not occur on a regular basis. To deal with it we do exception handling. The catch block will counter the exception. Exception occurs by external factor and its handling is called exception handling

(12) C: scanf & printf.
C++: Specialised cin and cout.

(13) C: no template support
C++: supports it, Java as Generics.
format to make once.

(14) C: as .c
C++: as .cpp.

(15) C: program is defined in form of function.
eg. calculator has 5 fn. of ADD, SUB, PRO, DIV, PER(%) and & Main fn has the Menu.

(16) C: has no inline fn.
C++: has inline fn.

(17) C: has no concept of namespaces.
C++: has namespace that encapsulate group of globle classes, functions, variables.

(18) C: has no reference variable (alias).
C++: The reference gives an alternative name. to previously defined variable.
with & we do aliasing.