

03

093-272 | Week 14

Thursday

Person2::name = "priya"

Person1 = sachin

Person2 = Anil

but if it is class

Person1 = priya } referenced copied
Person2 = priya }

We can Implemented Interface in struct.

Integer is struct type (value type in
datatype).

No scenarios like inheritance here.

* Enum → check constraints, improve readability.
Start from '0' by default.
System::enum (class).

enum Branch { 3 }

// Branch b = new Branch(); // by default mech
Branch b = Branch::chemical

⇒ 1 ← convert.ToInt32(Branch::chemical)

Value +1 → mech = 10

civil → 11

APRIL

2025

11 Demo → Console Application.

1. Console::writeLine ⇒ string Person.
it stream of bits ⇒ data;
→ data over network

11 format of data ⇒ stream (technically).
characters stream ∈ console.

12 Harddisk ← pipe
pipe stream ← Harddisk
Network stream ∈ Network

12 Series of bits n byte,

13 Any data wants to store in HDD ← FileStream

14 Pen → StreamWriter.
Data format over HTTP ⇒ HTTP format

15 Network protocol ⇒ data packet
each packet ⇒ 10 unit

'10 unit' in 10 unit packet, then need to
padding of 10 unit, to full the packet.

⇒ Network stream does this kind
of protocol.

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04

Week 14 | 094-271

Friday

05

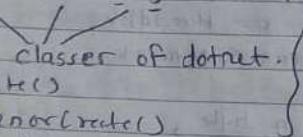
arif · arifin

095-270 | Week 14

Saturday

- transfer your file content in your database.
- memory stream.
- SQL Server → 4 → SQL data → file version.
- memory stream → conversion any data in byte array.

FS NS MS



System.IO

FileMode → open, append, truncate, read
all are enum.

FileStream → read, write, readWrite

StreamWriter pen = new StreamWriter(Fr.)

File.Exists()

APRIL

2025

After Break:

m
f

Week 15 | 097-288

07

Monday

* why object need to be stored in a file.

notepad example.

tree object of notepad is in memory.
(before, $ctrl + S$)

(about machine get off before saving, if machine get off,

the file data gets vanished.

window Powoff

Restart

Hibernate (on gear to power-section)

what is m take content from Rom
and is store in ^{HDD} hibernate.cis

we got our machine or it is.

* Read File.

StreamReader reader = new StreamReader()

* Object Write

① Emp class

StreamWriter

writeLine → 20 overloads → object type.

'In memory'

now writer will write object
in HDD.

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01

Day 5

Tuesday

Logger database using base, Event & delegates.
⇒ requirement
delegates pointers called by CLR.

public event mydelegate OnInsert;
" insert, update method is independent
of delegate or Logger"

New project → 10Demo

To do :- structure.

Defence type → class

value type → struct.

In C++ → we don't use new keyword
from for struct.

VC Coding standard → .NET core.

some value to struct → error.

some check in rules of vs code.

(1) variable or structure can't keep unassigned.

In Jr, you can only have parameterized ctor.

In struct, you can write default ctor and
parameterized ctor.

[It got memory on stack]

APRIL
2025

Week 14 | 082-273

02

Wednesday

```
public struct Person {  
    // getter | setter  
    // member fn  
    private int No;  
    private string Name;
```

Main()

```
{  
    person person; // error  
    p.No = 10  
    p.Name = "Jyoti";
```

person person // error in .NET core
not in .NET framework

Person person = new Person();

new Person() == Person Person.

this is valueType.

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Person person2 = P person (data copied
area. It is
value type).

27

086-279 | Week 13

Thursday

Compo \Rightarrow Form has a button.

- Form has many controls (which is allowing where we can add any type of control).

* I have to call my fn on button click.

```
class Form {
    public void callme()
    {
        MessageBox.Show(" ");
    }
}
```

* Now button let call fn callme

* callme (object o, EventArgs e)

Event Handler pointer = new EventHandler(callme)
(Delegate type) (ms delegate)

* it only accepts that method which
has (obj o, EventArgs e) parameter and
return's void

To tell CLR to call callme() on event
invocation.

button.click (pointer)
button.click += pointer

MARCH
2025

Day 6

2

click is tightly coupled with event
monitoring mouse cursor by CLR.

clicking is event which is
calling of CLR.

if user \Rightarrow Event.
Today. Data.

28

Friday

Singleton pattern
Delegate.

CLR (clr delegate) \Rightarrow
Front and Delegate
window form applic

Day 6. 27/03/2025.

F10 10

Serialization / Deserialization.
Collection.

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25

084-281 | Week 13

Tuesday

* Events

Something important to happen
interrupt has to follow some program.

User - interacting with software via input device

onClick = delegate.

Java spring → Action delegate / which not in syllabus.

To impact event notify you need some process

declare delegate

whenever event occurs it coupled with delegate
public event mydelegate; Accept's

when accept happens it asks delegate to what has to be done.

Ultimately CLR tell to the if this event occurred, then coupled with that delegate.

Student. Accept += Vikram.
delegate call by CLR.

MARCH
2025

Java → swing

F12 → To PPTN.

Week 13 | 085-280

26

Wednesday

called delegate by yourself

Now in event

+ = → attached / event is attached with delegate / coupling.

if not attached any process after event the CLR becomes cleaner to do what it does.

CLR calls delegate when even happens.

Practical usage of Delegates / Events.

⇒ UI programming

↳ web programming

ogdeevent. ↳ Desktop application (window based)

Now April

↳ (# → window → Desktop

↳ windows from App (.NET appl.).

DLL

Form class defn → system.windows form

calculator and form interaction.
Object with UI, object which is created is basically, UI!

Form1 (top)

MARCH 2025

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{ button class

Button button = new Button()

button.text = "Click me"

this.Controls.Add(button),

22

081-284 | Week 12

Saturday delegate bool myDelegate (int i)
→ type declaration.

Need to create pointer.

MyDelegates d = new myDelegate (check)

similar to JS like method reference.
callback concept.
(setTimeOut (PON, time))

as long as & write method is accepting integer and return bool.
so it is independent of method,
any method is okay as long as
it return bool and accept an int.

or logger project working
but logger is connected to consider.
which is tight coupling.
not any logger which works anywhere.

23 Sunday

public delegate void myDelegate (string num)
dependent on pointer, ind of logger.
public void Insert (MyDelegate p1)
{
 pointers (murray).

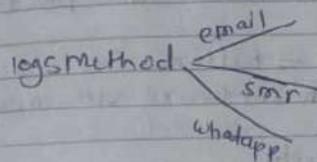
MARCH
2025

Week 13 | 083-282

24

Monday

loggers
delegater demo by,
making it independent of loggers.



mydelegates pointer = new mydelegates(logMethod)

database · update (pointer).

variation of delegates using loggers.

MI method → example.

Declaration → Delegates → inside namespace
if declared in class, declare why
class Name (xyz, mydelegate),

no need of write logger ↗ singleton.
built in → Apache logger ↗ also for dataset
any exception log, smr log,

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database log,
so need to download ApacheLog4j
'LogFormat' download

18

077-288 | Week 12

- Tuesday
- 9 getters/setter injection,
when to ask ctor injection, getters/
setters are dependent on requirement.
 - 10 getters/setter \Rightarrow user may or may
not initialized in setters.
make your code independent \Rightarrow DI.

Spanish checker \Rightarrow dependent

→ Spellchecker \Rightarrow independent.

After 12:10 break,

Editor working explanation via
diagram

Spellcheckfactory \Rightarrow helper class.

Inversion of control \Rightarrow IOC,
helping you to achieve the dependency
when factory returns object which use
for dependency.

Q what \Rightarrow How you stopped you not
overriding something.

MARCH
2025

Week 12, 078-287

19

New Project \Rightarrow Demo 4 \Rightarrow sealed Demo Wednesday

Sealed \Rightarrow to stop you to inherit.

① calculator demo \Rightarrow working.
it object looks and feels \Rightarrow no

company created their own controls
and sell their DLL.
(TDI \Rightarrow company).
Telemic theory.

Telekik, synchronus \Rightarrow Product Based CPY
To protect their product, use sealed, final

To Day's Data.

Inheritance

Abstraction \Rightarrow Abstract class \Rightarrow virtual over

Interface

Sealed class

DI

IOC.

ctor

Factory

\hookrightarrow Composition.

Sequencing with Abstract class.

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D&P \Rightarrow Design Pattern

20
Thursday

070-286 | Work 12
Monday 25/03/2025
Day 5.

OOP
 \hookrightarrow singleton (D&P).

Event & Delegate

Using Event & Delegate in OOP.

OSDemo \Rightarrow singleton Demo.

Keep application state consistent or constant.
e.g.

Weatherstation \Rightarrow temperature \Rightarrow collecting

data \Rightarrow embedding machine

\hookleftarrow plugged in by external device.

Need some constraints.

window xp 8, xp 10 for embedded machine

lost of 35 data, is penalty.

Singleton \Rightarrow Solar company e.g.
calculating avg temp of 60 sec.

Exception logger in every company uses
singleton classes to store exception in
logs.

function pointer \Rightarrow Delegates

SMG.

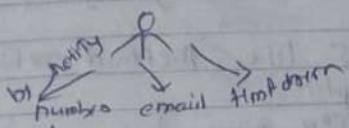
21

Week 12 | 080-286

Friday

After break,

indirect call \Rightarrow fn pointer
 $\text{int}^* \text{addptr}(\text{int}, \text{int}) = \text{add}^*$
 $\text{int add}(\text{int a}, \text{int b}) \{ \text{return a+b}; \}$



message is going as an input.

Log \Rightarrow string message \Rightarrow tight coupling.

instead of calling method directly
we will call it indirectly.

ODemo \Rightarrow Delegates.

bool check(int num) \Rightarrow check(10)

\Rightarrow direct call.

wants fn call indirectly.

delegate which pointer to method.

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which return bool which take
num as parameter single parameters

15

074-291 | Week 11

Saturday

- ④ Editor has spellcheck wrapper - but it has becomes dependent object
- ⑤ In ctor by default Englishspellcheck checker. (create object)
- ⑥ Want to available class level make it data member.
- ⑦ If Englishspellcheck check (then tight coupling) ✗
- ⑧ but want from user Public editor (Englishspellcheck someOther)
- { Checker = someChecker;
- 3 depends on how you called want
 - ⑦ ➔ ⑧ getting implemented.

16 Sunday

⑨ SpellCheckerFactory

MARCH
2025

Week 12 | 076-289

17

Monday

UPI Interface → every Bank implements.

example ⇒ Bajaj

ERP software ⇒ SAP implementation.

easy for internal working

Bajaj has invoice format, so any vendor need to use invoice format

II Invoice Interface to vendor.

Editor has unique functionality independent of spellchecker

* Dependency Injection.

If you write only spanishspellchecker.

as like you are creating Editor object which is fine but you

to pass any of spellcheck which is paid - that won't be work or no one by your editor.

Instead of this, by doing this Editor

is dependent on spellchecker,

Instead of doing tight coupling.

use dependency injection

constructor level dependency injection

you are doing interface which

your doing loose coupling.

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13

072-293 | Week 11

Thursday

- 9 Tightly coupled \rightarrow Harley Davidson e.g.
- 10 loosely coupled \rightarrow less costly \rightarrow Bajaj e.g.
- 11 when you coupling class, composition
comes in picture. dependent code -
de
- 12 give simulation, \rightarrow open notepad
Creating two tab of notepad
 \hookrightarrow instance of Notepad.
diffn in layout (h, w, l).
- 13 Notepad n1 = new Notepad(100)
Notepad n2 = new Notepad(112311)

① class Editors

Copy()

SpellCheck(string str),

② create object \rightarrow Editor & call spellcheck

more if else overload to code
so then can use reflection & attribute
annotation.

MARCH
2025

14

Week 11 | 073-292

Friday

- 9 code complexity.
Good function \Rightarrow one function more work
more
- 10 slow the application performance wise
- 11 standard \Rightarrow 20 \rightarrow 25 lines function code
more 40 lines.
- 12 if more than 40, break down with
multiple function.
- 13 for every lang. if we write separate
spell check methods,
so editor work better becomes to
do spellcheck.
- 14 spellcheck it self heavy function,
Editor has a spellchecker
but editor becomes tight coupled.
but wants loose coupling.
only signature common \rightarrow Interface
and publicly implementation
- 15 Spellcheck is type of spellcheck
ISpellcheck

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11

070-295 | Week 11

Tuesday

- type more
if similar requirement come
then base class full of empty (virtual)
methods which becomes nonsense.
base should be open for extension.
Revaliadate only needed for PPT in Iran
i.e. means it common in PPT, Iran

14 Create class SpecialReport() : Report.

abstract class can inherit abstract
class so don't need to implement
abstract method from base class.

same signature, sequence changed.
so make it virtual \Rightarrow and override in
SR.

so it first checks if special Report
so it generates method call which
match the sequence.

Show class diagram

Hello \Rightarrow Abstract

If there is not hierarchy \Rightarrow call by reflection.

MARCH
2025

ReportBuilder

Week 11 | 071-294

11

Wednesday

After break.

Factory pattern \Rightarrow Report factory.

two Base \Rightarrow multiple inheritance not
possible like java.

when we use Interface, Abstract,
composition,

* Head First Object Oriented Analysis and
Design Book \Rightarrow all oop concepts
Design pattern \Rightarrow more practical example
what is design pattern

New project \Rightarrow 03DemoOOP \Rightarrow Console App

Requirement

You need create Editor like NotePad
and need spellcheck functionality
by default forget English spellcheck
and all we gave other language
support but it is paid.

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2025

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08

067-208 | Week 10

Saturday

Call comes from where \Rightarrow only understand by debug
 so it works like SRP.
 no logic is common, so can't use as Interface.

New requirement \Rightarrow TXF Report.

abstract class \Rightarrow DLL.

(1) menu driven.

(2) ReportFactory class.

↳ public Report GetReport
 { switch case }

(3) Base \rightarrow child object creation.

Report rep = new Report() X error

so Report rep = new PDF()

so need to write for every class.

so Create ReportFactory object.

Now code is generated in appropriate manners.

MARCH
2025

Week 11 | 069-298

10
Monday

New Report Requirement \Rightarrow PPT.

Brew also wants Revalidate method.

will

(1) try write Revalidate written in validate.

(2) make private Revalidate() and call it in protected.

(3) New requirement \Rightarrow JSON want \Rightarrow Revalidate method

Code is not upto mark.
 bcz. common things should go in base
 which makes worse,
 which impact PDF and DOCX.

only pptx and JSON wants Revalidate

\Rightarrow (4) open/closed principle

open is extension closed for modification
 open for extension

Created protected virtual in Report.

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(14) PPTX

(15) JSON

} override Revalidate.

06

065-300 | Week 10

Thursday

- need to assure to call these four method sequentially,
- How it is do it?

one option

↳ Create one method and call all that method inside it

⑥ void GenerateReport().
 {
 CPVS()
 }

⑦ PDF::GenerateReport() → run it.

but when getting also separate method by intellisense.

⑧ make CPVR method protected.
and now our sequence assured,
same sort of logic applicable for
DOCX also.

⑨ DOCX class → Generates Report

PDF and DOCX for Report

both have CPSV method but logic
completely different but signature is
same and one method has
logic and signature both are same.

MAR

2025

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2025

Week 10 | 065-299

07

Friday

if the logic is common, so we can define method, only if signature is common then we can define Interface.

⑩ Base class, Identifying PDF and DOCX from a Base class Report.

generate abstract class

has signature method which is also abstract
if write private abstract method giving error.

if inheritance Report class

pure virtual method need to override.

but if the method is private it can't implemented by child → only acceptable so make it public class.

public abstract Create method in PDF and DOCX

If method is not found in child then it search in Base class.

come in Generate Reports

Create search in 1st PDF then back to Generate
Base is driving the sequence.

but back to Report object it also show Intellisense CPSV

I want that something available only child but not in others.
protected abstract void Create();

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04

083-302 | Week 10

Tuesday

First we wrote process and then
split it into bit of pieces.
so

start with oopf.

PDF

(we have to save data & validate
Data → parse data → CSV CSV
simulate the data.

① Console.WriteLine(CSV)

↓

② In static method.(CSV)

but should there method created
by program or ?

Main is driving class only have
input/output method.

③ Class PDF

Solid principle.

S → Single Responsibility Principle/one re.

O → open/closed principle.

L →

I →

D →

MAR

MARCH
2025

Week 10 | 084-301

05

Wednesday

S → class should have one reason to change
well-defined single responsibility. ⇒ modularity

try to follow one principle in everywhere
so you end up with following
all principle.

Solid principle ⇒ prerequisite ⇒ oop.

class
PDF is single responsibility class which
all method which needed to create

PDF.

④ Create object of PDF class and
run all method.

then new requirement come, so you
have to work words document class.
Word also need same kind of sequence.

we just recreate PDF ⇒ DOCX by copy-paste
code.

⑤ Again create DOCX object and
run all method.

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what if i gave the code to
other, and he doesn't run two
of the method, then sequence is
going to change.

dear.

27

088-307 | Week 09

Thursday

- Day 2 Data
- Console Application (Input/Output related)
 - Console.WriteLine()
 - Console.ReadLine()
- Debugging
 - Class Library.
 - class
- ① auto implementation.
 - some shortcuts of visual studio.
- Solution →
 - Show some demo of Person Address.
 - call getDetail() method and run it.

which method called we need its information, like give example of Console.WriteLine() it tell what it do.

→ want to tell people what it method does.

// summary: extra information to intellisense. () → in round bracket also tell return type.

FEBRUARY
2025

FEBRUARY
2025

28

Friday

(ASPOSE DLL. IT)

some company created DLL, it will work with better docx.

Highest use library in word.

Telerik and their dotnet product, pie chart data → need some chart function, no need of inventing because they will buy their controls.

Syncfusion

Created component we just need to use, also give libraries. You need to use DLL can use third party DLL.

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01

24/03/2025
08:00 | Week 00

Days

Saturday

Yesterday's discussion

Starts with app concepts.

Focus on app usage. It will help when we start App. mvc.

Create

Application \Rightarrow .NET Core.

eventually when we create project in .NET Framework and .NET Core same concepts remain same from last 25 years.

Enable Native AOT publish \Rightarrow for application deploy.

project should not start with numbers. by default namespace name is same as Project Name but for namespace cannot contain number so it put underscore before number auto.

02 ~~Project Structure~~

\hookrightarrow Dependencies

\hookrightarrow Framework

\hookrightarrow Library.

If you want use dll so it should be created from .NET Core.

MARCH
2025

Monday
.NET Core

Week 10 | 08:00-09:00

03

cause it has issues of compatibility. Monday as .NET Frame works only on windows and .NET Core works on all. So first.

.NET \Rightarrow platform specific.

Open source mono .NET \Rightarrow American Airlines.

\sim 8 years

open source \Rightarrow no platform and then bill gates.

so it doesn't come in market so in 2015 .NET Core, firstly.

people doesn't believe in .NET Core, they took time for understanding it. more company worked on .NET Core cause it worked on all platforms.

npmjs.com you can publish and deploy your application.

NuGet.org \Rightarrow third party package.

\hookrightarrow manage NuGet package.

Show how to add install update

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22

053-312 | Week 08

Saturday

- 1 project folder \rightarrow .sln file
- 2 source code \rightarrow rebuild
- 3 Ideally we should create first solution and then project blank solution.
- 4 Namespace concepts using \rightarrow system, structures.
- 5 For \rightarrow to point console \rightarrow 5 times
- 6 For \rightarrow notepad tab tab esc
- 7 some for and if demo
- 8 class constructor.
- 9 right click args \rightarrow snippet \rightarrow insert snippet \rightarrow visual c#
- 10 this snippet made of c# and file there will all three with visual studio tool, can you create your own snippet, let you take snippet manager.

23 Sunday

FEBRUARY
2025

FEBRUARY
2025

Week 09 | 055-310

24

Monday

- 9 If you want write same code multiple time you can keep that code by toolbox.
- 10 keep only one vs code
- 11 one file \rightarrow multiple public class there is no rule for naming convention.
- 12 Microsoft coding standard.

1 class
2 and getter & setter
3 start with java getters setters.
4 in Main
5 Person.setName / encapsulation.
6 Person.GetName
7 so avoid these all dummy
8 make data member public.

- 9 setting \rightarrow adding and validate
- 10 getting \rightarrow reading and protecting/manipulating data

Poco

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For example Age validation.
use getter & setter function.

20

Thursday

051-314 | Week 08

Fr

Step over \Rightarrow F10 F5 \Rightarrow contents.
Step into \Rightarrow F11

break your project in pieces.

One scenario \Rightarrow input or string

\Rightarrow $=$ float

or cross range of integer.

test the method with several inputs.

client can give any input

You have to have better code.

normal we run the program
and test the input.

immediate window like browser

Console \Rightarrow if you can't see this

menu \Rightarrow Debug \Rightarrow window \Rightarrow immediate

It shows up only in debug mode.

If project has large number of code

then it takes 20 min to build

so why need to run once run
and come to breakpoint to the logic
of core logic.

FEBRUARY

2025

post-AFTER breakc..

Week 08 | 052-313

21

Friday

Can we keep logic in class

can keep that class in group

can keep in project.

* How to use visual studio.

Solution:

too of DLL created by company

\Rightarrow they are inter-dependent, if any
change one close in DLL then need
to build DLL and exec, but what

if we compiled all together

one soln has multiple project,
and compiled together.

but what if 'Demo1' has no
relation with other project so building
non-related project, it is not good
so unload project which you don't
want part of compilation, unload
project doesn't remove it, it just
not being part of compilation,
press F5.

Now click start button

load math.dll \Rightarrow but it's not executable
hit play button and you will
get errors.

errors: A project with output type
an class library cannot started directly.

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25

Tuesday

056-309 | Week 09

Show them MSIL code of Person class.

Aqua \Rightarrow Data mem

pink \Rightarrow method

Δ = variable

Block \Rightarrow method.

↑

why we discuss this

getters/setters \Rightarrow property in dotnet.

Variable with -Name then property start with Name, i.e. MF rule.

\Rightarrow without need to take variable you will get default variable named or 'value'

You are getting or setting it depends on you are writing left on side or right hand side.

getters setters demo.

put breakpoint and show them which method gets called.

FEBRUARY

2025
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26

Week 09 | 057-308

compiled it and show them
MSIL

Show them how getName and setName showing.

Person.Name \Rightarrow Internally called setName.

Benefit to write them or help you to create it easily.

shorter \Rightarrow propfull ? tab from command esc.

here piece of code generate faster.

we can make -

readonly, writeonly, etc.

Get

region is better than comment to club together code.

In class method

public string getFirstName()

} return (Name + Address) \Rightarrow getters/setters

?

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15

048-319 | Week 07

Saturday

Introduced to Converst Method.

Convert To Int32

Convert To Int16

Convert To Int64

How to parse non-compatible type.

Shortcut F5 \Rightarrow Build & Run.

Takes to Debugging

what if we entered wrong input like,
Tenwhat if you want to do re-use
and create methodbut it is also done by visual studio.
 \rightarrow likeint result = x + y \Rightarrow so i want
create one reusable method.so right click on that \Rightarrow quick action
 \rightarrow Extract method.

Show also preview section.

16 Sunday

Is this method is belongs to program.
class should have responsibility.

If there class or Math, so that

Math class have add, math sub method

 \Rightarrow which is logically related

Your class or entity holds logically

num members, method.

FEBRUARY

2025

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2025

Week 08 | 048-317

17

Monday

For example.

working class, knowing about cap
concepts,

one example of inheritance,

Report is a PDF

Report is a Docx

we will give common example.

taking example cap shape or Employee.

we first think about Base class,

if Base class has common things,

for Bottom-up approach,

we write all classes and try to find
which common in that.

Square & rectangle

try to put square & rectangle pt in

hierarchy. \Rightarrow Square is a rectangle.

but calculation type that is different.

Should program class holds Main and Add
select Add and sub method \Rightarrow

(move type to another type?)

and it created one class Maths

FEBRUARY 2025

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when you write a code, it is
your choice.

Time to complete project.

18

049-316 | Week 08

Tuesday

architect.

- Project \rightarrow cooling period \Rightarrow allow to changes.
- Manager \rightarrow new version.
- Maintain project \rightarrow already build.

go to DLL file which can be used in multiple project.

Solution \rightarrow Group of project.

New project \rightarrow class library (.NET Framework)

\hookrightarrow To F# or C#

Project structure (class library).

Console

main Method executable

No Main. (only logic code), not executable.

(How employee, no project, keep on hand, so give it work then create library) something (state db, sending email)

So we have some librairies which already build which can be directly used.

building blog community \rightarrow complete project in ± months

FEBRUARY

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Week 08 | 049-316

19

Wednesday

sharing project folder of DLL.

that it doesn't have .exe.

- How to use MathLib DLL
- \rightarrow Add reference in .NET framework.

Main \rightarrow method \Rightarrow typical to class \Rightarrow need to be reusable \Rightarrow putted to library.

Don't write dependent logic, like in reusable class, if you write console write line in class then it can only work in console application not in webapplication.

try to write type-safe, generic code.

write code as independent of context.

DLL loaded on demand in memory, like if you want import Console.write \rightarrow tell it load system.

but you have to tell.

Debug \rightarrow Breakpoints.

Step-by-step execution, shortcut \Rightarrow F5.

If output is wrong, imagine you have written ok, but in add method your output comes wrong, but what if you have wrote too little.

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Week 06 | 03B-327

07

.h file with never made for execution. Friday
It need to be imported.
So in dotnet use for executable and
DLL for reffer which has reusable code
Even you installed game ; there is
one exe and have multiple file which
has reusable code]

Come back to console Application.

using statement:

In project structure

↳ references.

by default import packages.

if you want import
click on Add \Rightarrow Add reference.

Giving an example

System.Data.SqlClient have to write

Full qualified.

To write

in Java \Rightarrow System.out.println

in dotnet \Rightarrow Console.WriteLine

cw \Rightarrow If overload method

Documentation \Rightarrow msdn \Rightarrow so to go GB.

F1

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11

Tuesday

042-323 | Week 07

On Hand

FEBRUARY

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May 23 2025

Week 07 | 043-322

12

Wednesday

Day 2 Data.

- Today's Agenda:
 - ① project structure.
 - ② Debugging.
- Yesterday's review.

in Company, mostly you worked with DLLs...

shortcut F12 \Rightarrow Go to the Defn:...
 Console.WriteLine() \Rightarrow Dotnet specific lang./method.

when you compiled it generates MSIL.
 so there WriteLine and ReadLine()
 are available also in VB.NET.
 So some methods are dotnet specific.

Comment = Ctrl + I + C
 UnComment = Ctrl + I + U.

Given example of :

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int x = 100 ; result = x + y
 Console.WriteLine(result).
 from this... How to take value
 from UserInput?

08

039-326 | Week 08

Saturday

→ app config → connection string.
→ project folder → bin → deploy

MSIL code ⇒ processor specific code

- 1 Start ⇒ Dev cmd ⇒ ILASM
- 2 Intermediate Language Disk Assembler
- 3 Pre Disk assembly bin and exe.
- 4 open one viewer, not editor.
- 5 Compile How MSIL look after compilation.
- 6 Assembly level language like memory C.
- 7 Can I code in the MSIL → Yes.
- 8 We code DiskAssembly ⇒ ILASM ⇒ Assembly.
- 9 It is written in code.
- 10 It is written in code in c#.
- 11 That's why it can use anywhere.

- 12 decompiled ⇒ decompiled IL code and generate C# ⇒ Yes.
- 13 + Tasmik
- 14 F4 file ⇒ JustInCompiler ⇒ returned.

09 Sunday

You can see source code to decompile
method, Autocall start.

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obfuscation

Week 07 | 041-324

10

Monday

→ You can lock metadata, instruction obfuscation

To Day 1 Data Day 1 content

• .NET compilation process

CLS

CTS

CLR

• .NET Framework

Console application and its structure.

Difference b/w .NET Framework / .NET Core

↳ .NET Framework

↳ Console Application.

DLL

Name space.

FEBRUARY 2025

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Thursday Namespace Demo.

- 1. sqlconnection() => to connect
- 2. sqlCommand() => to statement
- 3. sqlDataReader() => to results
- 4. → only used to sqlserver.

(Do you wish to collect oracle)

" OLEDB collection .

dotnet g.g. sqlserver → huge and
heavy supports for sql server.

Java → JDBC → mysql.

DB2, FoxPro, Sybase database rarely

you can connect oracle connection

to dotnet by OLEDB.

OLEDB object linking and embedding db.

fox, fox r database → old database

DB2, FoxPro, Lotus 1, 2, 3

none used now but for maintain project I want to connect that

need complete specific class

is ODBC. → open database connection

System. Data . DLL.

in C++ you used pointer using #include
so someone has created and for & x (.h file).
using it ... which we class library
here we are say DLL.

Tuesday

How visual studio special form other editor of language.

Java → Platform Independent.

Back to Diagram of Java bytecode.

Come back to Theory

dotnet → output ↗ exe → work ↘ dll.

on windows 10, 11, -.

CLR and .NET Framework installation

close with windows application also

deploy on windows machine.

that the concern ?

In 2000

but people shifting opensource

2015 they made CLR, JIT, open source
keep in that why they support another
platform.

try .NET Framework Core.

It works on Linux, Macos

what we will learn .NET Framework Core,
and can be deploy in Linux, Macos.
universal application for dotnet

4.5.7 they stop .NET 8.0 → In industry.
still works .NET 3.0, 4.0

open source .NET Framework core. Wednesday

VSCode → unix, mac ⇒ only support for console application

use VM

After VC installation we have to create first console application.

Games are WPL - on unity all

games games development on windows there is no alternative.

Difference from .NET Framework and .NET Core.

.NET Framework ⇒ 4.8.1 ⇒ pre.



Console application

give some boilerplate code.

CSC done by editor... handy-tools.

somebody doing intial for u.

Main ⇒

Frontend ⇒ initial.

namespace → to group certain classes logically Java database analogy similarly.

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Week 08 | 08-09

03

Monday

Now every lang have same feature for all feature commonly,

UK \Rightarrow VB.NET Asia \Rightarrow C#.

10 /ops {
11 copy,
parameters}

12 Q. Do the mr support lang supported same feature \rightarrow yes.

example new keyword.

here JIT is compiler and in java interpreter.

D

after 12:00 \Rightarrow

stephat taught before break,

.NET framework diagram.

by that diagram visual studio tool,

mobile app

smartwatch app

IoT

Desktop, web application

} one tool for all.

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01

no 2¹⁰

032-333 | Week 05

FEBRUARY

2023

Saturday

- .NET Framework → give required build in package like Java.
- 10 Developers created Languages and their supportive compiler.
- 11 Language supports:
32 + official | 85 + unofficial.
- 12 Java → J# / recently C#
diagram updated C# Lang
specification (CLR) (CFC)
given one example of int = 100
- 13 How it convert to machine code.
again gives comparison for VB.NET
for int variable,
looking to this you cannot tell
in which language it is build.
- 14 Data type and its range,
MS decide some range → for every data type.
- 15 CTS → common type system.
- 02 Sunday update again diagram with CTS.

Range	Common type.
Some min - max	System.IntPtr

Vb.net basic is not oop. but VB.NET is.

10:00 to 12:00 .

Week 05 | 031-334

31

JANUARY
2025

Day 1 Data . CLR → CTS →
CLR → JIT.

Friday

NN

Java compiler byte code → machine code .

C# (C++) msIL code → machine code .

.NetLangauge → VB#, F# for .Net .

comparison of java compilation
and .Net compilation by diagram .

.Net output assembly file
DLL .

CLR installed with Framework .

20 min → explanation of .Net compilation .

Visual Studio .

direct machine → only need .Net framework .
which also gave CLR .

after compilation we gave assembly to .

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17

Thursday

For only one hour if I also transform
data, it will cost for each byte.

so for this one solution used is JSON formatter.
JSON.org

want to generate JSON in dotnet or Java
need to write JSON in Java or dotnet
ReactiveSoft creates own generator.

2008 → JSON object introduced.
people started focusing on it.
cause mobile applicatons widely developed
in JSON.

→ read data.
object obj = deserializer.
= serializer.deserializer(Fn).
and if (obj) is Fmp,

* JSON serialization.

JSON serializer = new JsonSerializer(fr,
JsonSerializerWriter.Serializer(Emp)(emp)).
(Generic).

JsonSerializer.Serializer(Emp)(emp, fr).
public member.

27

108-257 | Week 10

APRIL

2025

18

Friday

Social media - fb, insta, link, twitter ⇒ React.
so <div id="react"> empty </div>
call axios and take data from server
on scroll ⇒ React.

but what if we write backend in dotnet
then web API internally user JSON serializer.

we can't use XMLSerializer, JSONSerializer
directly, there is wrapper class for that.

Today Data

① Date Event & Delegation

② FileIO

→ Streamwriter

→ XML binary formatter

→ XML serialized

→ JsonSerializer

③ Structure

④ Forum

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19 28/05/2025 Day 6.

Saturday

- ① Collection
 - 2D collection (Key:value) pairs.
 - ②
- ③ Collection → serializable.
- ④ Arrays
- ⑤ Casting/Boxing/Unboxing w.r.t object on the stack of mvc.
- ⑥ Casting of objects of Hashtable (2D collection).
- ⑦ ArrayList → collection of object of unknown size.
- ⑧ Generic (need to know generic)
- ⑨ @ L2L1 + C7 ⑩
- Stack of mvc
MVC stack @ ← Stack C7, Queue C7
- (whenever doing casting → pvt effects)
data vary from stack to heap → dequeue.
- ⑩ Generic Delegator (good in terms of performance)
- before 2025, only one choice for 2D collection
Hashtable, then Dictionary comes in picture which is Generic 2D collection.
(In case of mvc → ViewData, TempData, ViewBag)

20 Sunday * using collection we do serializing.

APRIL
2025

21

Monday

① Arrays.

Declaration

int arr = new int [3]
int [] arr = new int [3] {1, 2, 3}.

Object Array:

int Emp[] arr = new Emp[3].
emp[0] = new Emp();

Emp emp1 = new Emp().

emp1.NO = 10

emp1.Name = "Jyoti"

emp1.Address = "MP"

arr[0] = emp1;

String Format (ToString alternative).
(recommend avoid '+', cause it creates new string object) (not gd practice because string immu)
can we have some pre-allocated buffers
here is string builder and it gives append
(if earlier object put for deletion).

If you want to use string builder.

StringBuilder builder = new StringBuilder()

builder.append(this.NO)

builder.append(this.Name),

return builder.toString()

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22

Tuesday but what if i want call so time
then need to write so timer appren
then is user corner of readability.
(poor readability)
→ Now need that somebody that
stringbuilder internally use
place holder → string format.
String format = "No={0}, name={1}"
emp.no, emp.name.
string.Format(format, emp.no, emp.name)

ArrayList ↳
Object Array.

I need ArrayList which holdr anything.
① string str = "abc"; but string is class.
② string str = new String();
↳ now this array
if ctor overloading.

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23

Wednesday
Week 17 | 113-020
② string str = "abc"
↳ (String str = raw String(s))
when you compiled s in JL code
you can see string str = new String(s).
want to use "String" need init with new.
we will use ②
String str = new String(s);
② becomes alias of ①.
for object obj ↳ but in def object is in
capr "Object"
object obj = 1
object obj = "Jyoti"
you can assign anything, but when
to get value you need convert object
to that specific type by casting.
object obj = 1
② int i = Convert.ToInt32(obj);
(blindly converter).
if object obj = "string"
and try to convert it gives error.
of input string is not correct
format!

24

Thursday 114-201 / Week 17

Boxing \Rightarrow value type \rightarrow reference type
 UnBoxing \Rightarrow reference type \rightarrow value type

It gives performance issues.

* Something can holds any type of array \Rightarrow Object Array.

```
Object [] arr = new Object[9];
arr[0] = 1
arr[1] = "abc"
arr[2] = 20.10
arr[3] = emp
```

Iteration and condition based like obj is int.

if I need only Emp data, but you trying to store in object even you know it is Emp array, it is need to casting.
 So need one unlimited size and not want to casting.

ArrayList (1) Emp arrays of unlimited size.

(2) Emp arrays to need to search unique Id.

Dictionary example.

25

Week 17 | 115-250

Friday

(1) emp array of no limit.

ArrayList arr = new ArrayList()
 (Internal redefinition) \Rightarrow (corner VB.NET).
 (is normally long we cannot redefinition
 (go's Long)). \Rightarrow size 3 to size 5.
 here redefine work, but you don't have
 to do it internally do.

(2) arr.Add(emp)
 (2) arr.Add("abc")

arr.size \Rightarrow arr.count
 [Java Inventor is part of c# Inventor,
 similarly code].

Conc \Rightarrow casting happens \Rightarrow data goes in object format.

(3) Find Emp by array.

for search
 foreach (object obj in arr) if don't know
 the size.

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{
 Emp(emp) = obj

if (emp.email.toLowerCase() == email)

26

Saturday For search, we need iterate over

- list collection
- need more pointers
- so we use set collection's key-value
- are object and email as unique key
- ① Hashtable table = new Hashtable()
- arr (email, employee)
- arr (email, employee)
- what if give to email same key multiple times, so key must be unique.
- No need of iterate.
- get value by running set keys.
- object filterEmp = arr[email]
- but it need be convert in emp.
- Emp emp = (Emp) filterEmp

faster than and easier search.

27 Sunday

cons → casting, cause it is object type, more casting than not gett performance wise good

APRIL
2025

all have some problems
array → limit size

ArrayList → uniqueness iteration.

Hashtable → more boxing & more casting

28

Monday

Need soln? → Generic

looking for emp array first no limit size

no need of casting.

① List<Emp> list = new List<Emp>()

(size problem solved)

list.Add(emp1).

list.Add(emp2)); // error - generic.

② iterator foreach (Emp item in list).

b) no need of type casting.

③ search in list. (but search problem is not solved).

④ List<Object> list = new List<Object>()

it can representive alternative of arr or list, so now-day all user 'List' instead of arraylist.

* Stack<?>

Stack<Emp> stackEmp = new Stack<Emp>();

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foreach using pop method internally.

29

Tuesday

* Queue (1)
 Queue (Emp) form = new Queue (Emp)
 Queue (Emp)
 form.enqueue (Emp)

Formed. ∞ degree

Only problem remain \Rightarrow search
anything to search search \rightarrow need to
iterate
but want searching more faster.

* Dictionary < k, v >

Dictionary (String, Emp) dom = Dict Dictionary
< String, Emp > ()
dom: Add (emp: email > emp).
Getval = getkey()
Emp emp = dom [email]

* Dictionary < objects, object > dom = new dict ()
 \hookrightarrow representative of HashTable,
so now-day no-one use HashTable.

30

Wednesday

Week 18 | 120-245

APRIL
2025

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Week 22

Saturday

Auto property

normal getters and setters
full prop example

- 11 if you don't write validation code
- 12 then why you want write fullprop
(getter/setter prop separately)

① old way of writing property:

- ② Auto property = public int No { get; set; }
this makes private members.
show msil code.
It will create private members
(Back-Field). (shorthand syntax).

- want validation write \Rightarrow ①.
- but what if private members want to
- use directly, not possible, write explicitly...
no alternative.

01 Sunday

shortcuts - Prop.

& Dic property.

Emp.No = 10
Emp.Name = "J"

MAY JUN
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2025

02

Week 23 | 153-212

Monday

③ can we write this.

var emp = new emp()

④ wants to write so members
without calling setter by . operator -
or in lots of writing so member.

the compiler
this will code automatically write
in msil

emp e = new emp()

No = 10

Name = "J"

3.

Object Initializers \Rightarrow order is not important
 \Rightarrow no need of initial all

[Anonymous type]

I comment for emp class

var as emp(); \checkmark for report purpose.

var emp = new() { No=10, Name="J" }

all is written by compiler.

even we don't write class, getter setter

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984 985 986 987 988 989 990

991 992 993 994 995 996 997

998 999 1000 1001 1002 1003 1004

1005 1006 1007 1008 1009 10010 10011

10012 10013 10014 10015 10016 10017 10018

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10047 10048 10049 10050 10051 10052 10053

10054 10055 10056 10057 10058 10059 10060

10061 10062 10063 10064 10065 10066 10067

10068 10069 10070 10071 10072 10073 10074

10075 10076 10077 10078 10079 10080 10081

10082 10083 10084 10085 1008

03

Tuesday

154-211 | Week 23

In msil
you can see all method is there
only setter is not.
emp.Name = "abcd" ; //error.
[property cannot be assigned value
it is read only]

Practical usage \Rightarrow Linq (all this user in it) (compliment to Lng).

- ① Can redeclare its two object {
- ② can make collection for anonymous type

Today's Data

- ① Partial class.
- ② Implicit type.
- ③ Anonymous type.
- ④ auto property.
- ⑤ object Initializer.
- ⑥ Anonymous method.

With all our blank topics
get to last topic we need to go
of course it will not given
but at least reader not confused

JUNE
2025

2025-06-08

Day 8

04

Wednesday

Week 23 | 155-210

continuing with C# Picture

Again no need of creating new class
for field, use anonymous type and
add the field inside it to fetch data
from database.

var v = new { No=10, name="J", Address }

⑦ var v1 = new { no=10, name="P", Add="P" }.

is v and v1 becomes created two diff classes
or it will create one class from for that.
in JL it create only one class

⑧ var v2 = new { no="abc", Name=123 }

compiled code \rightarrow same class used in console
and JL code.

even property is diff, but still it
making same class.

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same object Sequence change of prop.
var v1 = new { Name="abc", No=10 }

05

156-209 | Week 22

Thursday

- It creates two anonymous type.
- [Anonymous and anonymous]
- In object initial → theory → seqn doesn't matter.
how it internally works → anonymous
- Example: ① ②
- public class Matrix<T, P> { public class mathtt{P} }
Anonymous type concepts based on top of Generics
E.g. Even HashDictionary<K, V> → first para
→ 1st and second! V.
- As you can see It code defn of any type In JL it shows generic type.
- public class AnonymousType<No, Name>
- 3 AnonymousType<int, String> obj = new y;
- AnonymousType<String, int> obj = new y;
- In Generic
 - ① sequence matter
 - ② type you can't change.

JUN
20
2025

06

Week 23 | 157-208

Friday

- Q if we create single object of anonymous type can we create a collection?
 var arr = new [] (Readonly object).
 { new Emp { No=10, Name:"y3" },
 new Emp { No=11, Name:"p13" },
 3. }

Java → ResultSet → detset → DataReader.
 read data and add on anonymous type.
 practically usage → mainly → for writing logic for creating report.

- Object v = new { no=10, Name="abc" }.
 How to get back data.
 need to do typecast on anonymous type.
 var c → (28) v
 that's why we use var instead of object.

Fackension method

↳ compiler feature.

JUN
2025
Su Mo Tu We Th Fr Sa

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String str = "abc@.com"
 String class doesn't have any method.
 want to validate email. ← need one method.

07

Saturday

1500-207 | Week 23

- all class method with extra parameter
- own inheritance from string
- public class MyClass : String { error }
- (cannot inherit from string (sealed))
- want one method with string which
- ② is not available in string class.

② create own class

public class MyHelper { }

```

1 public bool checkForValDate(string s)
2 {
3     return true
4 }
5
6 [ str. 8 ] [ myhelper::checkForValDate ]

```

need to static

so make class static
public static class MyHelper { }

so add (this string s, int i) as
it will going extension method with
string class.

bottom no func → string::checkForValDate(str, 100).
object is with 'i' am calling the
method if this operator,

JUN
2025

09
Week 24 | 180-206

Monday

checkValidDate avail with
string method ⇒ checkValidDate(100).
Internally it write checkValidDate(str, 100)
ext extenr string type having method with string
practical usage
[Ex 35 related methods]

this method available only on projects, not
universal, but sharing due to other this
method can be used.

why it is needed.

versioning -
ms creator make fn work like this
and create dll ⇒ service pack.
[don't want change framework, but
use new versioning method]

no need of change framework, only version
update. (Any) show extension method
added later in version.

concerns → average method class explanation.

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We Tu We Th Fr Sa

1 2 3 4 5 6 7

8 9 10 11 12 13 14

15 16 17 18 19 20 21

22 23 24 25 26 27 28

29 30 31

③ what if

public bool checkValidDate(this string s, int i)

then it available in any ref type.
check for int. o (It appear also there)

10

Tuesday Week 24

which doesn't make sense.

- ① var v = new Func<int>(); v.Name = "I" + 3;
- can use
- v.CheckFor... It also contains extension method
- we can call extension method (converted)
- with anonymous type.
- ② versioning
- ③ Generic extension for all type
- ④ works for anonymous type (conversion)

Lambda Expression

- ① static bool Check(int i) { return (i > 10); }
- execution time
- seconds > milliseconds > elapsed ticks
- (System.Diagnostics → class for analysis before)
- stopwatch sw = new Stopwatch();

sw.start()

checker

sw.stop()

sw.Elapsed.ToString()

Count the digits of a number

JUNE
2025

11

Wednesday Week 24 | 162-203

Normal call → mintime: ex 1023

② Delegator

Delegator → mintime e.g. 1055

③ Delegate wing Anonymous method → 934

myDelegate pointer = delegate (int i)

{ return (i > 10); }

3

④ Func<int, bool> Func<int, bool> S81

ms build in method = Func<int, bool>

Func<int, bool> pointer = delegate (int i)

{ return (i > 10); }

3

⑤ Lambda method call using func. 440

func<int, bool> pointer = (i) =>

{ return (i > 10); }

3

Combination of func + lambda working

JUNE 2025 three stages:

⑥ all statement consider an object

→ conditional statement class

binary statement class

1 2 3 4 5 6 7 8 9 10 11 12 13 14

15 16 17 18 19 20 21

22 23 24 25 26 27 28

12

Thursday
16 JUNE / Week 24

- all these statements keep in binary tree format - to increase performance
- condn stat \Rightarrow 10 lines of code
if true do this ; if false do that
if if or else will executed.
- condn conversion of machine code
for those all etc. put in binary tree format.
only needed branch will compiled and executed
unlike compiled all statements.
- ① Internally create expression tree.
 - ↳ Repo each stat as type of object
 - ↳ Generally object is type of binary statement (format or conditional) statement
 - ↳ All objects that represent a statement put up in binary tree format w.r.t. expression tree
- ② ↳ compile this expression tree in machine code.
- ③ ↳ execute machine code and optimised the code.

measurement of execution

13

Week 24 | 164-201

can we make optimised this

if knew condn stat or binary stat's we can make expression tree and create pointer which points to compiled code (staging reduce O₂) [call this feature user in L7N8]

- call using expression tree.
 - ↳ system Ling-Expression (generic).
 - For expression <func<int>, tree<int> \Rightarrow C(1710);
1. Create a tree
all stages created
 - [viewers will show algorithms of tree which after remove by mr]
 - 2. compile Tree.
func<int,bool> pointer \rightarrow tree.compile()
(before exec it comes in binary) (it gives machine code)
 - 3. call and executed compiled code
- ③ executed (not call compile and create tree)
pointer(20)
- option ④ 440 (create compiled 446, size = 4)

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14

186-000 | Week 24

Saturday

option⑥

make n recompile $436 \times 1 = 436$

exe $\Rightarrow 4 \times 100 = 400$

total Time: 836

calling 2k time, for that option⑥

better wrie performance

what if i am created another dll

keep Create n compile code in

there and

use th in another dll which only

for execution # taken time only 4

to writing this type method using reflection to increase performance

not efficient

calling 2k time, for that option⑥

(option⑥) Capital in upper it was method?

15 Sunday

what happens better than ⑦

make n recompile in ⑥ but was ⑦

(overwriting)

(new, app halts here) can ⑦ only

30 JUNE
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16

Monday

2025						
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185-200 | Week 24

Saturday

option⑥

create n compile $436 \times 1 = 436$
 $\text{exe} \Rightarrow 4 \times 100 = 400$
 total Time ≈ 36
 calling 2k time, for that option⑥
 better w.r.t performance.

what if i am created another DLL
 keep create n compile code in
 there and
 use it in another DLL which only
 for execution # taken time only 4

for writing these type method using
 reflection to increase performance

After basic:

Filtering collection

to like database, similiar way
 we write querter for collection,

15 Sunday

Linq = Language integrated query

(query, bind, filter, sort) op's @ runtime

JUNE
2025

Week 25 | 187-198

16

Monday

① Filtering based on foreach
 normal collection

```
var list = new Emp[1] { 1, 2, 3 };
var result = new List<Emp>();
foreach (var item in list)
  if (item.contains("p1"))
    Console.WriteLine(item);
```

but object is more, we filtering down
 the performance.

② querter like spl.

```
var from emp in list
  where emp.address.contains("p1")
  collect emp;
```

bring this query on top up of collection
 and its result also collection type (Imutable)

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17
Friday

109-107 | Week 25

- ② after query
 - var emp = new Emp("No 5", "Adit", "pune")
var empList = emp.list();
 - if assumption input query is find when result is used.
Lazy execution (deferred execution).
give memory to result when you are using it.
 - foreach (var item in result) ←
(new data is also considered)
 - result is type Ienumerable
 - result is var type which got value at compile time.
 - select emp.ToList()
 - Ienumerable convert emp in list
 - Emp.ToList() → result is used
Calling extension method → where object is called as first parameter
that's why ② data will not seen,
query executed here
 - select emp.Name → what type of result.
var result = Ienumerable<string>.

JUNE
2025
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18

Week 25 | 109-106

Wednesday

- what if I want emp.
(select emp.Name, emp.No) || error
you cannot have multiple type in
Ienumerable.
- Ienumerable need can be only one type.
(select nos.name from emp → sql) possible.

class Dataholder

{ Names No

select new Dataholder() { Name = emp.Name, No = emp.No };

different type of
becomes wrapper of multiple data inputs.

- what is the purpose of dataholder.
→ to hold diffn type of data, alternate way →
② Ienumerable<out T> & (read only).
- set select new() { Name = emp.Name, No = emp.No };
- [1 Dimension Collection]

but want manipulation on data → dataholder
represent only → anonymous type.

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170-180 | Week 20

Thursday

Retrieving data on anonymous type.

* where, select method
where result goes to select as output.

To List \Rightarrow accept data of anonymous type
and convert it to List.
whole collection go as First parameter

return $\{ \text{a} \} \Rightarrow \{ \text{return a: anonymous}(\text{contains}(1)) \}$

Linq + like sql queries
but sequence of extension method.

where, select \Rightarrow compile expression tree.

2008 \Rightarrow Linq
before 16B iteration take more time which perform
and time produced time from 8-9 hours using Linq
Consumed

Dynamic

With an interface known but
not sure what type the variable
in 2010, new type. Conver \Rightarrow Dynamic

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public class Book { }
public class Emp { }
public class Factory { }

public class Books { }

public class Emps { }

else

return new Emp()

main() { }

Factory f = new Factory()

Object obj = new f.getFactory()

Book b = new Book()

Book b1 = (obj).b

Cw(b1.title)

if (obj is Book) \Rightarrow (obj.title)

vars obj = f.getFactory()

(vars got defn at compile time).

var = object

can't write blindly Cw(obj.title) / error

has to do typecast

dotnet 4.0.

dynamic obj = f.getFactory()

((it jet know)(happn runtime))

No casting required.

But wrong input throw error

If the obj is emp which not contains

title. (RuntimeBinderException).

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174-190 | Week 25

Saturday binder finding in object class
 (title property).
 dynamic is runtime feature, using internally user reflection
 (Convert.ChangeType())
 can change the type based on input.
 too dangerous to write code using dynamic, cause wrong field
 get exception.
 so what is better (static rather than dynamic)
 compare it and type cast

dynamic Use → MVC $\begin{matrix} \nearrow \text{WPF Framework} \\ \searrow \text{unity} \end{matrix}$ \rightarrow gaming;
 mvc → view

Today Data.

- Anonymous type.
- Lambda function.
- Expression Tree
- Linq.

- dynamic.
- extension method

22 Sunday

lambda expression, anonymous type, extension method, dynamic, linq, expression tree, partial method.

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Day 8
30 May 2025 Evening

Week 25 | 174-191

23

Monday

optional/default parameters / named parameter.

print (No, Name, Address) } instead of doing
 print (No, Name)
 if addr not given default value of
 addr will get print

void print (No = 10, Name = "", Address = "")

starting compulsory parameter, and end last optional parameter.

print (No = 10, abc) }
 so it gets confused where to values assigned

print (No = 10, Name = "J") }
 can change sequence.

print (Name = "", No = 10)

partial method.

Usage → years ago solution: not MVC.

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Tuesday

175-180 | Week 26

- public partial class Test {
 partial void validate(string value)
 private string Name
 {
 get { return Name; }
 set { validate(value); }
 Name = value
 }
}
- Test t = new test; t.name = "abc";
 putting breakpoint on validate removed
 by compiler because it's only validate
 method is only declared.
- After writing defn, the breakpoint appears.
 one declaration \rightarrow one definition
- ① partial method supposed to part partial
 class
- ② partial method by default return void
 (procedure).
 If given return type then can be
 logic or not
- ③ partial method by default private.

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Wednesday

Week 26 | 176-180

[If public, someone will call
 on object and If implementation is not
 written then issue can be occur
 so only within class.]

why these constraints of partial method
class name is mapped with empty name.
by visual studio create one emp class
auto generated
but on above class ms written
do not modify this class
even if you modified data value in
set still
and if any new column added to
the table, If you are going to change
it get overwritten

Form class \Rightarrow partial method

2015-16 it was working
it was using in entity framework and
Attribute based validation (reflection)

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notes next week we'll cover

26

Thursday

177/186 | Week 26

Nullable Type:

object obj = null //ref type
emp emp = null

int i = null //error: value types

why? int i = null;

in poco	db
emp	sal
{	100
↳ int struct	null
↳ int s4 = 100	now
↳ 3	database null \Rightarrow 10
↳	but null \neq 0

only compare when it is possible
to assign 'null' to int.

Java (Int, Integer)

int? i = null ('?')

? = one generic type

Nullable<int?> salary \Rightarrow null to int safely

↳ everyone follow these syntax.

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Friday

Week 26 | 178-187

int salary > 0

salary = null

salary.HasValue \Rightarrow return boolean

(Is it hold value or null).

before 2005 specifically for
checking null, ms provider one method

isDBNull() return boolean.

Special value \Rightarrow DBNull, which we hold value.

.Net 1.1 \Rightarrow No Generic.

Iterator

String[2 days] = new string[]
{ "monday", "tuesday" }.

one item at one time. (java. \Rightarrow itr.next())
(internally yield keep counter)

week w = new week()

foreach (var item in w) //error

L) internally called getIterator()

you need to do itr.next()

it remember counter via yield.

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Saturday

179-180 | Week 29

class week : IEnumerable {
 * the collection in which for loop even
 works that collection class internally
 implements IEnumerable.
 (Implement method)
 public IEnumerator GetEnumerator()
 {
 for (int i = 0; i < days.length; i++)
 { return day[i]; }
 yield return day[i];
 }
 (foreach internally ask for i this)
 * error ⇒ one iteration shooting for one call
 ⇒ 1st time call ⇒ i=0
 2nd time call ⇒ i=1 start from here.
 * no one create such collection (rarely happens)
 (no one use this)
 rarely raw implementation of collection
 one object created in week
 and treat it as collection in foreach.

29 Sunday

week[1] // error's week is not array
 generally half collection ⇒ foreach working.

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Monday

Week 27 | 181-184

Indexer
 In week class {
 * index symbol
 public string this [int] {
 get { return days[i]; }
 }
 3.

current object ⇒ this
 the property where we write this name
 as property we called Indexer

week[i] ✓

In Java ⇒ if we using Hashmap, when
 we want data we use get()()

but don't ⇒ in dictionary
 we write arr [name] ⇒ [not used any]
 get

public class mydictionary { 3.

public Emp this [string Name]
 get { return emp[Name]; }

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set { Emp emp = (from e in emp
 where e.name = name
 select e).First(); }

03

- Thursday | Week 27 | 184-185 | 186-187
so need to login to machine.
① machine keep (wincred) (aguidirectory matrix)
and
one machine → so user configured
and all machine connected to it
and with token they validate user.
now
A guidirectory is on web
at home we can login company's machine.
1. who use this sqlserver who rare user
this is.
2. SQL Server Authentication mode
username: password:
3. mix mode ②
both, NT & S mode
sql-express → by default → win auth
(own installation).
client tool both
server tool mostly both.

04

- Friday | Week 27 | 185-186 | 186-187
To communicate.
Server Explorer → Data connection
→ Add connection
→ Create new sql server
② Server name: (local → option → default)
pwd auth
③ New database name:
[no intelligence or not a tool for
database developer].
so for the that, sql management studio.
(one of the heaviest tool).

SQLCMD → New project.
Can we connect to sql server via code.

We have build in classes.
ADO → Activate Data object.

by default.

System.Data.SqlClient → ConsoleApp (.NET Framework).

Microsoft.Data.SqlClient → consoleApp.

L → Install ← option.

or alternate way.

react package → npm → bring from npmjs.

dotnet package → manage nuget package.

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	31					

(basically we can install by
npm command but need to
install window shell cmd.)

05

Saturday 186-179 | Week 27

```

SqlConnection connection = new SqlConnection(connectionString);

string ConnectionDetails =
    "server = \"Instance Name\";" +
    "database = \"DB Name\";" +
    "Integrated Security = true;" +
    "You are looking for win cred." +
    "server = data source." +
    "database = initial catalog." +
    "error won't dent" + mechanism of
    "connecting with database" +
    "logon error"
but don't want write explicitly.
dataconnectionName → right click → properties.
→ connectionString.
to yet not connected to database
to establish bridge to database.
Connecting database via code
connection.open();

```

06 Sunday

```

SqlConnection command = new SqlCommand("String")
    .Command = command;
    .Connection = connection;

```

JULY
2025

07

Week 28 | 188-177

Monday

SqlDataReader reader = command.ExecuteReader(); ← select
 command.ExecuteNonQuery() ← DML
 (query result is in server buffer).
 while (bool read.Read())
 [reader is pointing to first records can
 be a array of object or collection]
 while (read.Read())
 ntvo = Convert.ToInt32(reader[0])
 string name = reader["Name"].ToString()
 string add. = reader["Address"].ToString()
 (object needs to be converts)
 3 reader.Close() → connection.Close()

Insert query

```

queryText =
    "insert into Emp (Name, Address) values
    ('{0}', '{1}')";
    int = {0} varchar = '{1}'
```

format = String.Format(queryText, Name, Addres)
 SqlCommand command = format, connection);

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29	30	31				

08

Tuesday 180-176 | Week 28

DeleteQuery
physical delete will not done
record mostly deactivate or deactivates

- 10 Testing mode is okay
but in production we are not actually
delete the record.
- 11 every country company has a rule
to maintain records for years.
- 12 stored procedure.
we need to compiled and stored in
database.
- 13 execution \Rightarrow D2 for input parameter

- 14 execute syntax
want to call stored procedure into code.
- 15 spName = 'spInsert'
- 16 queryText = 'spInsert'
- 17 normal sql known. Only DMV opt.
and want to tell sql that it is
stored procedure.

sqlcommand command = new SqlCommand

command.CommandType =
 \Rightarrow System.Data.CommandType.StoredProcedure

JULY
2025

09

Week 29 | 190-175

Wednesday

SQL Injection Attack.

\rightarrow to prevent attack, sql parameter
there is way to pass sql parameters.
need to create sql parameter object

SqlParameter parameter = new SqlParameter
(@name, Name)
(enum) SqlDbType.VarChar
, so).

parameter1.value = Name
parameter2.value = Address.

Command.Parameters.AddWithValue(parameter1)

Command.ExecuteNonQuery()

Ideally this code is not going to write.

can our code be reusable.

Project = 21DemoADO \Rightarrow Install ms-data.sqlclient

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10

Thursday

191-174 | Week 28

- 1 DAL layer
- 2 Evaluating table we creates a poco
- 3 POCO ← object mapping > entity model
- 4 Class is independent of c# or sql
- 5 All is done → Connected Architecture
- 6 can put DAL as DLL
- 7 ActionDelegate → accept something return nothing
 (void)
- 8 Generic delegate used
- 9 public event Action<string> OnSelect;
- 10 one FileLogger
- 11 `destr`
- 12 DAL → OnSelect += Filelogger.Logger.Log
- 13 EntityFramework Core.
- 14 reverse engineering.
- 15 NewProject → 22DemoFF.
- 16 Database = AffDB
- 17 manytomany → third table getting created.

11

Friday

Week 28 | 190-173

July 2025

Package: ms - EntityFrameworkCore Version 8.0 (aligns to target framework)

ms - EntityFramework.Design 8.0 (got some templates),

ms - EntityFrameworkCore-SqlServer 8.0.4

ms - EntityFrameworkCore-Tools 8.0.

[Table("Employee")] ComponentModel.DataAnnotations.Schema

public class Employee

{ [Column("No")] [Key] ← auto pk!

 public int No { get; set; }

 [Column("Name")]
 [StringLength(50)]

Example: one trainer teaches multiple subjects.
one subject can cover by multiple trainers.

Public class Subject

{

 public int SubjectId { get; set; }

 public int Name { get; set; }

 [2025]

 public List<Trainer> Trainers

 [Mo Tu We Th Fr Sa]
 [1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31]

 [public int TrainerId]

 [public int Name]

 [public List<Subject> Subjects]

12

Saturday
189-172 | Week 28

public class FFDBContract : DBContract

- one its object holds the collection of emps, trainers, subject.
- so this class should be internally connected to database.
- not have to explicitly just inherit DBContract class which comes from EntityFrameCore package.
- its generic code written in DBContract (Data retriever, creator).
- DBContract normal class.
- base method overriding.
- virtual protected { onConfiguring(DBContractOptionBuilder optionBuilder) { optionBuilder.ConnectionMethod = "UseSqlServer"; optionBuilder.UseConnectionString("setdatabaseName"); }}
- so this method calls by DBContract.
- can't call by itself DBContract class.

13 Sunday, FFDBContract represents collection.

Properties

```
public DbSet<Emp> Emps { get; set; }
```

(take data & and save it)

JULY
2025

14

Object → find → class → table → applying filter /
setter → retrieving collection → store in emps.

Do we still have Table &

① pco | DBContract write and compiled it.
too commands has to execute for to create database.

package manage console → command

Alternate
Tools → NuGet package manager → package
manager console

PM> [add-migration mgt]
it uses reflection > found all pco/DB.
class which has annotation and
master table.

why it generates migration file and you
can change it and save.

PM> [update-database]

it created all tables
and refresh the sql service.

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15

- Tuesday 106-109
- 1 main() {
 - 2 EFContext context = new EFContext();
 - 3 var Emps = context.Emps.ToList();
 - 4 ⇒ converts DBSet into List.
 - 5 To insert:
 - 6 context.Emps.Add(Emp);
 - 7 context.SaveChanges();
 - 8 To update:
 - 9 Emp e = context.Emps.Find(value of PK);
 - 10 context.SaveChanges();
 - 11 To delete:
 - 12 context.Emps.Remove(Emp);
 - 13 context.SaveChanges();
 - 14 Today's Date
 - 15 ⇒ Connected architecture
 - 16 ↳ Software
 - 17 ⇒ Entity Framework Core.

JULY
2025

31/07/2025

16

Day 9 Evening
New project = 23 Demo Threading

Wednesday

① Thread, CurrentThread, ManagedThreadID
one thread exec by one (main, f1, f2, f3).
by default desktop application
is single threaded.

② indirect call of f1 and f2
internally making object of ThreadStart
Thread t1 = New Thread(f1) and
delegation
ThreadStart

(tell me which function to call)
so if I want f1 then want
one pointer who points f1 to enriched
it)

thread t2 = new Thread(f2).

t1.start() & t2.start() is
you can't determine the thread (t1 or t2)
t1.join() → work first and joined with main.
t2.join()

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Time taken huge. (not trying to design
work then start
with)

17

108-167 | Week 29

Thursday

- so for only hello world program we don't create threads! (main will handle)
- so identify work and according requirement create threads.
- More time taken by Console.WriteLine, even if it is using stringbuilder.
Internally it calling more obj method so internally more object is created.
- For debugging ← takes more time.
- What is debug?
Compiled code → msil → CLR → JIT → native
and the exe.
- FS → compiled and run. (exe running)
(msil converted to binary)
and line ① of native code execution.
but why it pause or stop at line ①?
['o' and '!' mapping to msil]
[msil line ① of C# equivalent]

reverse mapping

binary → msil → C#

need a mapping file

so 'o' and '!' this symbol for this

JULY
2025

31

18

Week 29 | 168-166

Friday

project → bin → .pdb file

↳ program debug database

If you give this file anybody can do debug!
windbg → one of best tool written by ms

even in C++

you can change the code

it's code mappings → dev doesn't want to learn cause they comfy with VS debug.

If we want to give you code for production then we compiled our code at release mode.

If you binary code to the client machine,
you want to debug on machine 3 the client machine (VS) → remote debugging.
(windbg tool).

debug timing → debug mode (compiled)
→ and executed also mapping.

without debugging want to run code then use Ctrl+F5

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19

Thread infrastructure creation Beauty
200-165 Thread taken in debug - In taskbar.
Saturday You have no control on thread while
debugging.
Time taking without debug mode.

Time taken = in thousandns.

- 10 who executing code \Rightarrow one CPU
- 11 but machine has multiple CPU
and wants to use all CPU for exec.

12 Task
give ActionDelegator.

- 1 Task T1 = new Task(F1)
- 2 Task T2 = new Task(F2)
- 3 T1.start(); T2.start();
- 4 T1.wait(); T2.wait();
- 5 [remote theory for one remote \Rightarrow queue created]
- 6 main \rightarrow F1=7, F2=8 etc

20 Sunday CPU don't understand tasks, it understand
only thread.

task is lighter than thread.

How?
process has thread and app
is running process.

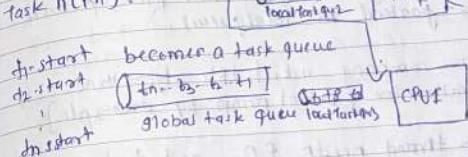
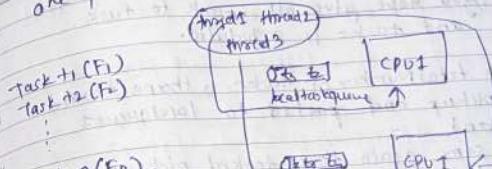
JULY
2025

LocalContexts, Tasks, and TaskQueues

21

Monday

one process has multiple threads.



t1.start becomes a task queue
t2.start (task by t1)

t3.start global task queue (task by t2)

don't mean task start
when you say t1.start, internally
CLR created queue and all tasks queued
in that queue.

why first CLR not visibility of CPU when
it see multiple CPU, the CLR get
visibility
and for each CPU it creates taskqueue,
which cannot support localqueue.

since CPU understands threads
so there is created threadpool
these threads assigned to CPU
for example.

Thread1 assign to CPU1

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2025

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22

- Tuesday
- 2025 all threads created by CLR, Threadpool.
 - From this thread CPU gets work.
 - You have give all work to task.
 - and tasks is scheduled.
 - in totalNumber of tasks → three tasks
 - pickup and parked to localqueue1 and
 - same again three tasks pickup and parked to localqueue2.
 - [some company asked this algorithm
callcenter → petrol pump by example]
 - when thread needs F1 and task is a medium.
 - $F_1 \rightarrow F_1 \rightarrow CPU$
 - if F1 executed and time is remained then CLR assigned F2.
 - All its time get overrid.

Queue → FIFO

- if localqueue1 task is finished
For localqueue2 have taking time
so it taken one task from CPU2 and parked to CPU1, scaled task and mean CPU2 works given to CPU1

23

Wednesday

- Petrol Pump \Rightarrow multiple outlet
- \hookrightarrow anyone person
 - \hookrightarrow queue.
 - if outlet has minimum space can have two or three bike in outlet.
 - so they make global queue and
 - IF someone work is assigned complete then one from global que go the task, so but we can go any queue which available not only assigned.
 - mean degre from one queue and enqueue in another queue.

- ④ callcenter (1000 calls).
- global queue [1000 calls]
 - one executor \leftrightarrow handle \rightarrow 1 call
 - [this queue \rightarrow 3 call]

this is the example of parallel programming.

- can use thread in loop?
- so for iteration 100 \rightarrow 100 threads are created.
 - List<Thread> Thread = new List<Thread>()
 - for (int i=0; i<100; i++)

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Thread $T_i = new Thread(DoSomething);$
 $T_i.start();$
Thread.Add(T_i)

24

Thursday

206-180 | Week 30

for each (new thread in threads)

1. { Thread::john }
2. 3.
- Time taken = 413 \Rightarrow 1 CPU.
- 11 multiple tasks via task parallel
1. List<Task> tasks = new List<Task>();
2. for (int i=0; i<100; i++)
3. { Task t = new Task(doSomething()); t.start(); tasks.add(t); }
4. 3.
- Task t = tasks.get(i); t.join();
5. tasks.parallelForAll(tasks.toArray());
- one we create task explicitly
- \Rightarrow implicit program
- and when you don't create tasks by yourself
- \hookrightarrow implicit programming.

25

Friday

Week 30 | 206-180

implicit parallel programming

7 employee data, to iterate them and points their name.

```
public static void & point(Emp emp)
{ CwC(Emp.name) }
```

Time taken ForEach = 33.666
34.125 (by single thread (main)).

but what if for each iteration we create tasks, but we are not going to create it, it will create using

Parallel.ForEach(emps, point).

Internally for each ForEach there will create one task. Task will created by parallel.ForEach.

Check output and order

Time taken = 29.7192

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Output and order differ so the print method executed by any CPU, you can't determine which CPU is executing

26

Saturday
207-158 | Week 30

- * Parallel Ling.
- * Replace ForEach by Ling query
- * Room emp in emps select emps.tashring
- 10 Output \Rightarrow sequentially
- 11 Time taken =
- 12 Can we run the Ling in parallel.
 - 1. say \Rightarrow ask
 - 2. to let Ling create one task for filtration.
 - 3. \Rightarrow no sequentially data
 - Time taken = 1 lakh

Today's Date

Threading:

Tasks

Parallel programming

\rightarrow Implicit

\rightarrow parallel, ForEach

\rightarrow parallel Ling.

- Explicit.

27 Sunday

JULY
2025

2025

Day 10.

1/06/2025

28

Monday
Week 31 | 208-158

L2N8, mvc, ADD O3NET2 features.

MVC \Rightarrow MVC is Design pattern.

Project \Rightarrow Ooolebrave \Rightarrow ASP.NET core web app (MVC).

MVC moreover mvc.apl which generates UI.

react.apl \Rightarrow by default = 3000

MVC dotnet \Rightarrow in range 8109

MVC browser page \Rightarrow responsive view + integrated bootstrap also.

before MVC pattern.

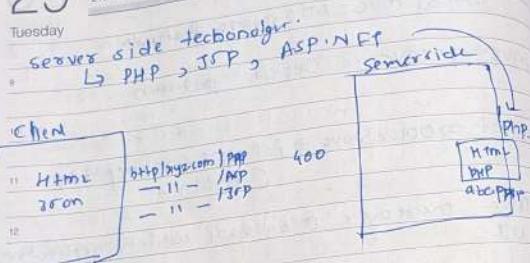
why JSP sevlet teacher before springboot.
 \Rightarrow cause it MVC pattern get easily understand.

before MVC \Rightarrow ASP.NET

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29

Tuesday
210-155 | Week 31



2. Server side know which techo browser understand → HTML, JSON, JS.

3. JVM installation on server-side,
so server generated

4. Some HTML and some JSP and send
HTML to browser. (what browser und.)

if 1m people visit server then
need go installation and CPU.

server is now-a-day two costly
because we can have server on mobile.
so now-a-day no-one user this.

JULY
2025

30

Wednesday
211-154

This Techo is obsolete.
PHP, ASP.NET, JSP are outdated.
when we click of privacy shome link.
then server is giving all HTML with HTML
all data comes with clicking.
why need all data - but it is MVC.
Cause everything done by server.
not like single page application.

localhost /home/privacy no extension for file
before localhost /php:php. (some php + some HTML)
/JSP:JSP.

we are not giving call to page - but
page.php has (some php + some HTML).
and (this mixture of code) is tedious
to maintain this.
i.e. the reason page.php (.php extension)
goes out from market.

can we have UI and code on diff
page ⇒ then MVC comes in picture.

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PHP, JSP, ASP.NET off - one pattern
of page controller pattern.

31

212-153 | Week 31

Thursday

- Page Controller pattern.
- you ask for page (e.g. PHP > JSP) code of UI is difficult to maintain.
- high maintenance
- ③ migration toward Front-controller pattern
- echo → PHP, JSP, ASP, .NET
- Front controller pattern.
- http://localhost:8081/index (call without extension)
- Angular framework (MVC) replaced by PHP.
- JSP → Springboot
- ASP.NET → ASP.NET Core Web (MVC).
- Laravel | Springboot | ASP.NET MVC.

↳ In this.

when we give call /Home/index.

Controller → class Home

HomeController

J.

AUGUST
2025

Week 31 | 213-152

01

Friday

we will decide which class should be called where to wrap the UI.

- Front Controller Pattern.
- (1) you ask for the route. HomeIndex.
- (2) code that UI are separated
- (3) easy to maintain
- Techno → PHP (laravel), Springboot, .NET Core MVC.
- Front-ends

(OS (for open source))
ASP.NET MVC (only for windows).

before springboot → struts

Node → app. use (req, res) → middleware.

Programmer → dotnet mvc.

webapplication. Create buildin

→ get object of webapplication builder

if container initialized or if container

get initialized.

HomeIndex → Home class

controller

HomeController.cs

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24 25 26 27 28 29 30

shift delete → line delete

02

Saturday 214-161 | Week 31

- public ViewResult Index()
 - = {
 - return View();
- 3.
- Controller object blends model + UI.
- empty the models > View folder.
- View
 - ↳ Home (add a file where want markup)
 - (Razor view empty (.cshtml) or .vbhtml)
- Code + UI
 - before dotnet \Rightarrow classic dotnet \rightarrow Asp.NET.
 - but code is tightly coupled
 - \Rightarrow Asp.NET (mvvm) \Rightarrow loosely coupled.
- even all those \Rightarrow as index.cshtml and you have to little work (# also, there is no alternative).
 - 03 Sunday (.cshtml (razor file)).
- How to give call to index method?
is index method is a regular method as other \Rightarrow Yes.

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2025

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2025

04

Week 32 | 215-149

Monday

localhost / Home/index \rightarrow controller.
 Home.hi = new Home();
 hi.Index()

so internally but in code nowhere you can see of creating HomeController object.
 Here using reflection and creating object of HomeController.

builder.Service.AddScoped(typeof(IspellChecker),
 typeof(EnglishSpellCheck))

(this mean when any call comes for Ispellcheck, where it need object of English spellcheck) [you have to take object of engsp]

app.listen() in node.
 app.Run() in dotnet

AddScoped builder.Service.AddSingleton()
 (when my server got so required for so request create object for each request in addscoped)
 but if i want for so request same and object created (not a new object)

AUGUST
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2025

05

217-148 | Week 32

Tuesday
if create Hindi
English

English → Hindi
server replaced English with Hindi

but what want English and Hindi ?

Actor
public HomeController : Ienumerable<ISpellcheck> {
where

but these object stored ?
as singleton stored in D.I. container.

Cause object created once and stored
in D.I. and call or use them on
demand.

builder . Service . AddControllerWithView()

so if you requested for HomeIndex
the CLR finds Home by name and
create its object using reflection, so

like this, all object created like
factory

so this factory need to initialized
which done by builder.

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06

Week 32 | 218-147

Wednesday

after break.

Initialize D.I. container or D.I. purpose.
builder-add scoped object →
builder-add singleton object →
newDefaultContainer(D.I.)

(example)

class DefaultControllerFactory : IControllerFactory

{ controller . CreateController (I

controller object < T >) }

(wrapper of req. sizes)

public Controller GetController (string controllerName)

"Home" + controller ←

↓
HomeController (object created
using reflection)

].
builder . AddControllerWithView initialized controllerFactory
which added to D.I. container.

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but method should be addControllerWithView
but why AddControllerWithView()

07

219-146 | Week 32

Thursday
public ViewResult Index()
{
 return View("xyz", emp);
}
3 (I want emp data in xyz.cshtml)
emp ⇒ model parameter (object type).

xyz.cshtml
if you want to write content
emp data gets by model attribute.
Name is (@Model)

RuntimeBinderException
[dynamic get object at runtime]
even @Model, no intellisense.
so is that Model is dynamic type.
dynamic ↘ wmv [avoid most of time of using
wpl [dynamic, we casting but it
mainly user in 2 from]

default view more dependent on dynamic
type, but you or dev know the
data using data or emp or data as
but they why need of Model
so make it sticky with particular type.

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08

Week 32 | 220-145

Friday

people do
(@Model.ProjectN.Models.Emp)
and it available intellisense.

in xyz.cshtml someone filling the
data at (@Model.No) ⇒ renders method
(filling UI).

Output (html) generated by server and
give it to browser.

who Bind UI or UI file. (SRP)

class RazorViewEngine : IViewEngine

{ public IView Render(ViewData view)

} based on which view file is called; searched.
processed & full and final browser
understandable response is given
back.

param → xyz.cshtml searched in Home\xyz.cshtml
and it process along with emp object
being passed. HTML UI is returned.

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09

Saturday 2021-144 | Week 32

D-2

`Ispellchecker = english`
`Ispellchecker = Hindi`
`new ControllerFactory`
`new RazorView`

Q. when you initialized Razorviewengine.

→ addControllerWithViews() (two helper
object need (defaultControllerFactory, RazorViewFactory))

var app = builder.build();

L2 give call to middleware.
this shall return app object which will
be used to be call servers middleware.

Fn. just like node.js.

app. UseStaticFilter()
in mvc (we are giving call to pattern route
not a file).

wwwroot

/home/index.html (calling with extension)
like page controller.

and / home/index (also like front
controller pattern)

mean we are using two pattern in
one application.

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PageController
(old type project)

1000 html filter migrator to mvc
so they use mvc and put all these
files in wwwroot folder. so there
are doing parallel upgradation.

Week 10 (2025)

11

Monday

why it supports in mvc we are using
FrontController then who is help what
is helper class who uses let you using
it.

[app. UseStaticFilter()]

(helping you on based of call
like .html call → search public Pal
like mvc call → search mvc.
which this middleware written by ms

app. UseStaticFile()

(check with req obj if req with extension
find → wwwroot
if not with extension (or FrontController)
search in then process the URL

3.

app. UseRouting()

handler the Route based on pattern URL
(like we give call /Home/Category/Index
work like stack.)

internally

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2025

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17 18 19 20 21 22 23

24 25 26 27 28 29 30

12

Tuesday Started week D.I.

Route collection

is a stack.

- when you do use Routing, one empty object or stack defined.
- `app.mapController.Route {`
- `name: default` → keyword.
- `pattern: /Home|method`
- 3. but if I want give my own pattern
- then write before the `app.mapController.Route`
- `app.mapRoute({ name: "myPattern" })`
- It added first in stack, then default one.
so as LIFO default works first.
- node → config.json
doesn't → appsettings.json (by default read by port)

`app.fun()`

it reads app settings and reserved port number start listening HTTP req on that port.

`app.run()` → `app.use(middleware)`

AUGUST
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13

Wednesday

before run we just did mapping of Spellcheck = English spell checker

call → `/home/index`
 req (before check is - en or not).
Split by '/' ("Home", "Index")
match the pattern with Route stack
(1st pattern and which is default pattern picked up.)

If pattern tells a Home is controller and Index is action method
we need HomeController object, so controller factory will be called using reflection the since controllerfactory expect two object of type. Spellcheck collection.
These object is taken from D.I.

Now call need to given 1 index method but can i give anyone to index method?
Authentication = isAllowed
Authorization = whatAllowed

AUGUST 2025 when to do user authentication before or after method
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
→ before.
we want pass Auth, Auth before rock.

14

226-139 | Week 33

Thursday

To authorize
override onActionExecuting (ActionFiltering context)

override onAction Executed (ActionExecuted)

after app run
for call /home/Index

1. first HomeController
onExecuting
Index
onExecuted.

2. ControllerObject.Execute()

3. {
 1. onActionExecuting
 Authentication
 binders bind
 Index using reflection
 onActionExecuted}

4. Name
 calling from Home-English \Rightarrow class Home
 Home-French \Rightarrow class Home
 so defaultController get failed cause
 of ambiguity.

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2025

Week 33 | 227-138

15

Friday

so working, this we need to create
our own controllerfactory and inject it.

Today's Data
Asp.NET Core MVC.

Day 10 - Evening.

New Project: \Rightarrow Asp.NET Core MVC \Rightarrow 001 DEMO MVC.

proj \rightarrow Core, sqldatasource, Design, tool (8.0)

Compulsory class need PK \Rightarrow table need PK
no alternative.

if table is already there no update
of class or table just map that
table with class.

Controller \rightarrow add controller \Rightarrow basic setup ready made.

| Home | Shared | It's by default
View | Home | Index.cshtml | razor engine
View | Shared | Index.cshtml | search here.

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any view go to the controller folder
only it can use it.
but in any shared folder anyone
can use.

Su	Mo	Tu	We	Th	Fr	Sa
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	15	16	17	18	19	20
	21	22	23	24	25	26
	27	28	29	30		

16

Saturday it went to show 'something' to everyone, while
it useful in error handling on making
common UI.

11 Public ViewResult Index() {

12 emp = emp.ToList();

return View
if name is not given by default method name.
(Index.cshtml)

13 overloads view(model);

view(string viewname, model)
view(object model) of

14 viewengine blende code and data
together.

Not want dynamic (@Model))

15 @models tempListModels

16 @model List<emp> empList; @model(r. emp)

to generation in loop

17 Sunday

① foreach (var emp in Model)

{ <td> item.No </td>

}

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18

Week 34 | 200-135

Monday

$\langle \text{tr} \rangle \rightarrow \text{g char} \Rightarrow \text{g byte}$.
we're getting g byte from server.
that's why only I can bring data not
come in pictures that why React > angular
JSON from server and rendered at browser.

VJ generated by server
network (show content of network).

builder · FieldService {

builder · Service · AddDbContract<FFDBContract>
(Contract) $\Rightarrow \{ \text{Context}, \text{useqlserver}(\text{connection}) \}$

then we called FFdbContract work with
default constur

but when FFdbContract called by mvc
it need public FFdbContract(DbContract options)
base(option)

after data submit \Rightarrow check Network window
general \Rightarrow Home after.

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payload \Rightarrow which data comes by body (part)
(key-value data)

(Name = "Prayag")
Address = "Kp"

19

Tuesday

After(rather call by using reflection)

- * When key-value check all getter setter of emp
- ⑩ Name key \Rightarrow check getter/setter \Rightarrow give value
- ⑪ who work this, who do this
[in mvc lifecycle]
- ⑫ begin of method 21 method.
After create need emp object that responsibility take by binder.
- ⑬ data take from body and auto constructed object
- ⑭ Model binder class \Rightarrow method bind()
mapping by key-value.
- ⑮ custom binder class \Rightarrow mymodelbinder : modelbinder
mymodelBinder : ModelBinder.
- ⑯ Browser get a call to index.
return RedirectToAction("Home").Index();

JsonOutput \Rightarrow JsonResult \rightarrow ActionResult
ContentOutput \Rightarrow ContentResult \rightarrow ActionResult

still until now we are returning JSON
that why we are using ViewResult
but not if now we are not

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2025

20

Wednesday

returning JSON, then we use
public IActionResult Index()
return Redirect("Home/Index")

- ⑩ model List<emp> which type of data
- ⑪ Controller -> Model \leftarrow props
value = @Model.Name

default form submission behaviour
on submit \Rightarrow all data set submitted
on it not take only readonly data.
it not get submitted or ignore it.

Bootstrap!
all is done by server not a browser.
in client who has not good machine, user CPU

Today Data

Asp.NET core MVC app.
 \rightarrow crud operation

responsiv.com

AUGUST
2025

Mo Tu We Th Fr Sa

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21

Thursday
2025 | Week 34

31/06/2025

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server-side validation → Day 11 →
(no one does this
but in syllabus)

if data submitted to browser and
that data checked by server → it
not recommended (only for namesakes)

Scaffolding → Generate Templatizer based on
view and controller.

Server-side validation → Attribute-based vali
 ViewData ViewBag Usage:
 Layout pages a.k.a Master pages
 - show collected data from
 pages in controller method.

Filter → Action-Result Filter
 write Web API → Handle Core error.
 Integrate web API with ReactJS Applic

Model → Database → need to be write.
 Code generation → but it gets b
 but it can be failed due to certain packages.
(.NET 6.0)

a-asp action = thodle html thodg server-side code.

22

Week 34 | 2025-131

26
27
28
29
30

HTML Helper → @HTML.DisplayNameFor
(model.Name → Name)
(model → model.Name)

dsp-con → <aspref> by its own
asp-action

reference libraries [] → carry bootstrap libr
(while creating)

DisplayName ("eno").
which will consider while printing

@HTML.ActionLink ("what to show", "where to
go") → "any param"

@HTML.ActionLink ("Detail", "Details")
new {model → model.id})
new {id → item.no})
↳ third param in pattern
(Index(id))

[click/select Address → textbox with cursor]
when you confused about Address text box.

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Mo Tu We Th Fr Sa

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variable
based type of input it create in Input
type (e.g. NO) → input type = Number

23

235-130 | Week 34

Saturday
what if data is wrong? Is server-side validation happens?

10 <span asp-validation-for

11 AmbiguousMatchException → own controllerfactory

12 Url, href → by default get (If you not work)

1 To resolve for AmbiguousMatchException

1 Home/Create } by using reflection

/Home/Create

3 and then resolved by verbs.

[HttpPost] [HttpGet]

4 asp-action → Create.

5 Code-generation → huge code generation

(binding yse it)

6 emp has department

24 Sunday but if I only add emp → then department data comes empty

7 Formcollection (bring all data)
modelbinders.

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25

Week 35 | 237-128

Monday

mechanical industry → dotnet

in regular expression ↳ we can check or validate pattern

Create (Emp e)

ModelState.IsValid

→ when emp comes, the ModelState tells in context of attribute given on emp property (string types required regular expression)

check that attribute, if it is correct then property is state at true (i.e. ModelState.IsValid = true).

else → return View(emp) if emp data is wrong and then collect all messages from of wrong input given on emp. (asp-validation-for) (not-dangerous). No need of validation own these helper class will do it for us. (server validate the data)

AUGUST 2025						
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24 25	26 27	28 29 30				