禪

[illegible] Managed Module [illegible] Garbage Collection [illegible]

[illegible]

[illegible].

[illegible].

[illegible] Garbage Collection [illegible].

[illegible] Leak memory

[illegible]. Leak Memory [illegible]. [illegible] Leak Memory [illegible].

[illegible] new [illegible] (delete[]) [illegible].

[illegible]

[illegible].

[illegible].

[illegible].

[illegible]. [illegible]. ([illegible].)

[illegible] ([illegible]) [illegible] swap [illegible] ([illegible]) [illegible].

[illegible]

[illegible].

[illegible] C/C++ [illegible]. [illegible]: «[illegible].»

[illegible]. [illegible] memory page [illegible].

[illegible]:

1- [illegible]. [illegible] Commited ([illegible]) [illegible]

[illegible].

2- [illegible].

3- [illegible].

[illegible] TSR) [illegible] (.[illegible] Task Manager [illegible] Performance Monitor [illegible].

[illegible].

[illegible] 1 [illegible] Memory (Peak Memory) [illegible].

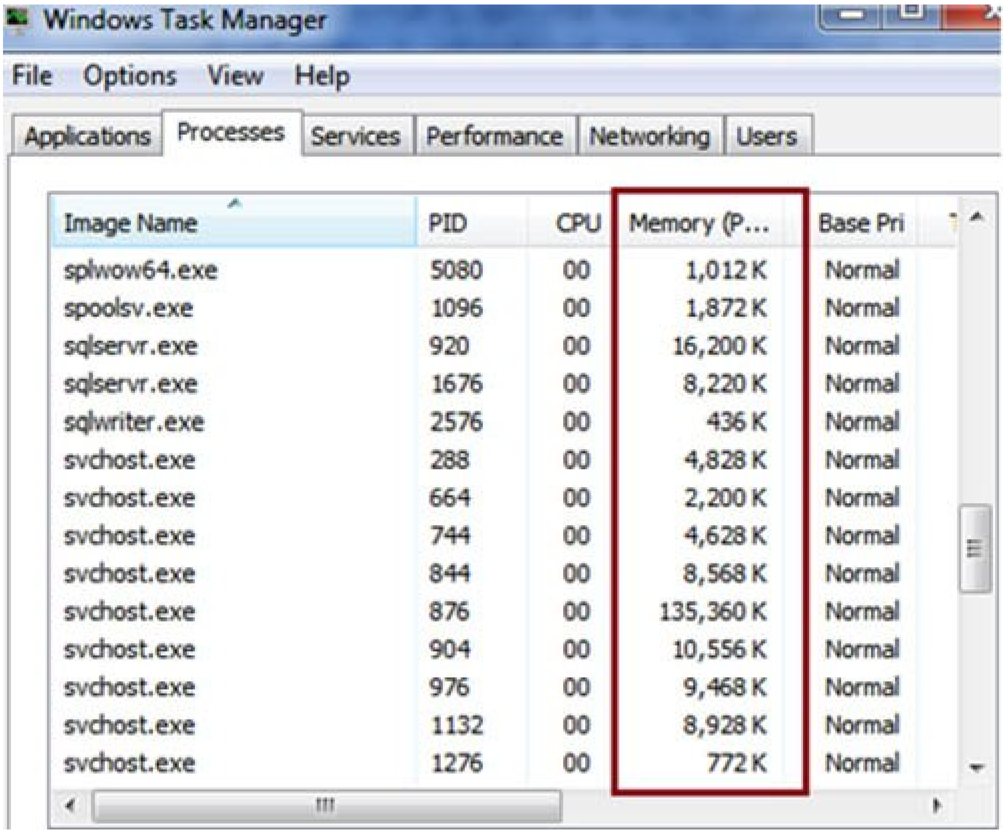


Image Name	PID	CPU	Memory (P...	Base Pri
splwow64.exe	5080	00	1,012 K	Normal
spoolsv.exe	1096	00	1,872 K	Normal
sqlservr.exe	920	00	16,200 K	Normal
sqlservr.exe	1676	00	8,220 K	Normal
sqlwriter.exe	2576	00	436 K	Normal
svchost.exe	288	00	4,828 K	Normal
svchost.exe	664	00	2,200 K	Normal
svchost.exe	744	00	4,628 K	Normal
svchost.exe	844	00	8,568 K	Normal
svchost.exe	876	00	135,360 K	Normal
svchost.exe	904	00	10,556 K	Normal
svchost.exe	976	00	9,468 K	Normal
svchost.exe	1132	00	8,928 K	Normal
svchost.exe	1276	00	772 K	Normal

1 [illegible]

[illegible] Net. [illegible].

[illegible] garbage collector [illegible] (Exception) [illegible].

[illegible] (Common Language Runtime) [illegible]

[illegible] ... [illegible].

[illegible] CLR [illegible].

CLR [illegible].

[illegible] CLR [illegible] CLR [illegible].

[illegible] (portable executable PE) [illegible]. [illegible] (managed code) [illegible] CLR [illegible].

cross-language integration
cross-language exception handling
enhanced security
versioning and deployment support
a simplified model for component interaction
debugging and profiling services

[illegible]

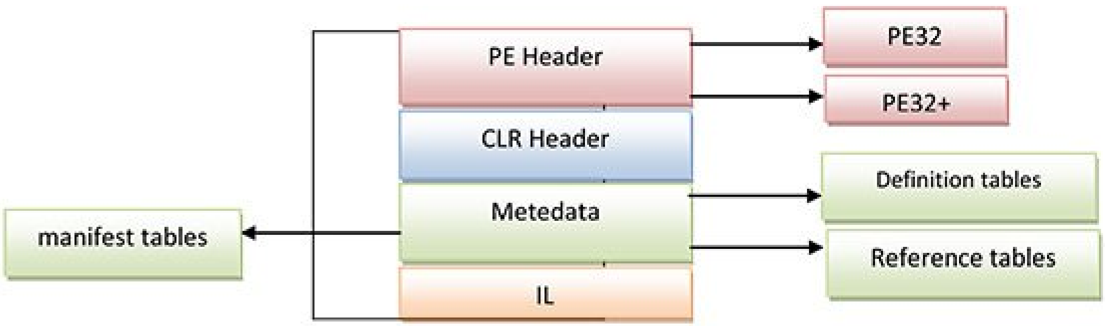
[illegible] (managed module) [illegible]. CLR [illegible] IL [illegible]. [illegible] 64 [illegible] 32 [illegible] PE32 [illegible] PE32+ [illegible] managed code [illegible] CLR [illegible]. [illegible] CLR [illegible] DEP (Data Execution Prevention [illegible]) [illegible]. [illegible] C# [illegible] Managed Module [illegible] JIT [illegible] native code [illegible].

[illegible] Manage Module

[illegible] managed PE [illegible] ([illegible] .Net [illegible]) [illegible]. [illegible]:

1. PE32 [illegible] PE32+
2. CLR Header
3. Metadata
4. IL Code

[illegible].



PE(32)+

(Portable Executable) [illegible]. [illegible] dll [illegible] exe
[illegible]. [illegible] exe [illegible]
[illegible]. [illegible] header [illegible].
[illegible] PE32 [illegible] 32 [illegible] 64 [illegible]
[illegible] PE32+ [illegible] 64 [illegible]. [illegible]
header [illegible]. [illegible] header [illegible] dll [illegible]
1GUI [illegible] CUI ([illegible]) [illegible] timestamp
[illegible]. [illegible]
[illegible] header [illegible]. [illegible]
[illegible] 32 [illegible]
[illegible] 64 [illegible] 64 [illegible] 2Wow64
(Windows on Windows64 [illegible]) [illegible]. [illegible]
[illegible].

CLR Header

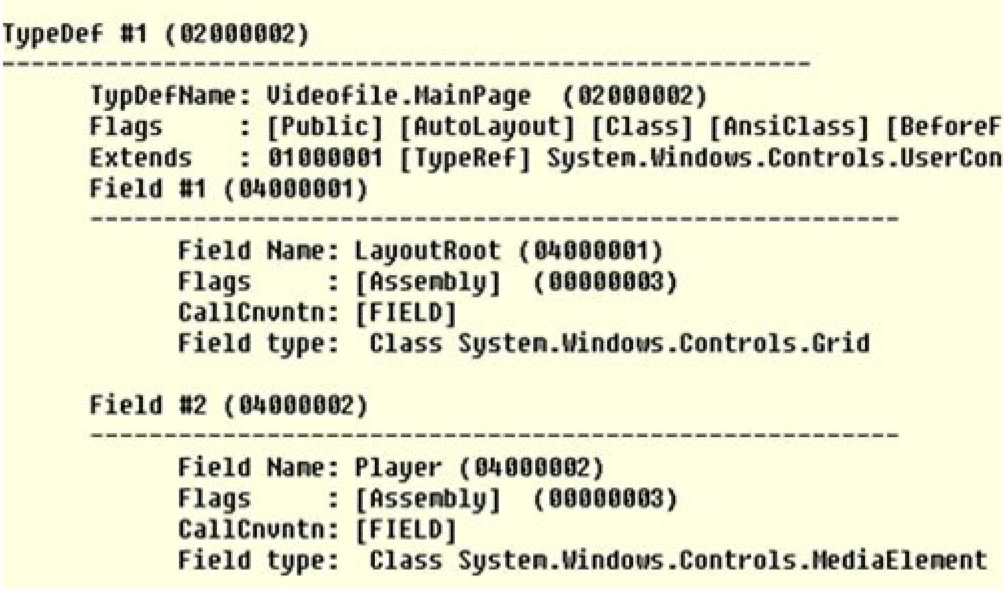
[illegible] section ([illegible] section [illegible]
[illegible]) [illegible]. CLR [illegible]
Net. [illegible].
CLR Header [illegible]. [illegible] CLR ([illegible]
2.05) [illegible] MethodDef [illegible] (Main [illegible]) [illegible] minor
major [illegible] metadata [illegible] (.v2. 0. 50727 [illegible]). [illegible] CLR header [illegible] metadata
[illegible].

Metadata

[illegible] metadata [illegible]. [illegible]
[illegible] metadata [illegible]. Metadata [illegible]
[illegible]. [illegible]:

- definition tables: [illegible]
[illegible]. [illegible]: ParamDef [illegible] ModuleDef [illegible] ...
- reference tables: [illegible]
[illegible]. [illegible]. [illegible]
TypeRef [illegible] AssemblyRef [illegible] ... [illegible]. manifest tables [illegible] manifest [illegible]. [illegible]
manifest [illegible] FileDef [illegible] AssemblyDef [illegible] ExportedTypesDef [illegible] ManifestResourceDef.

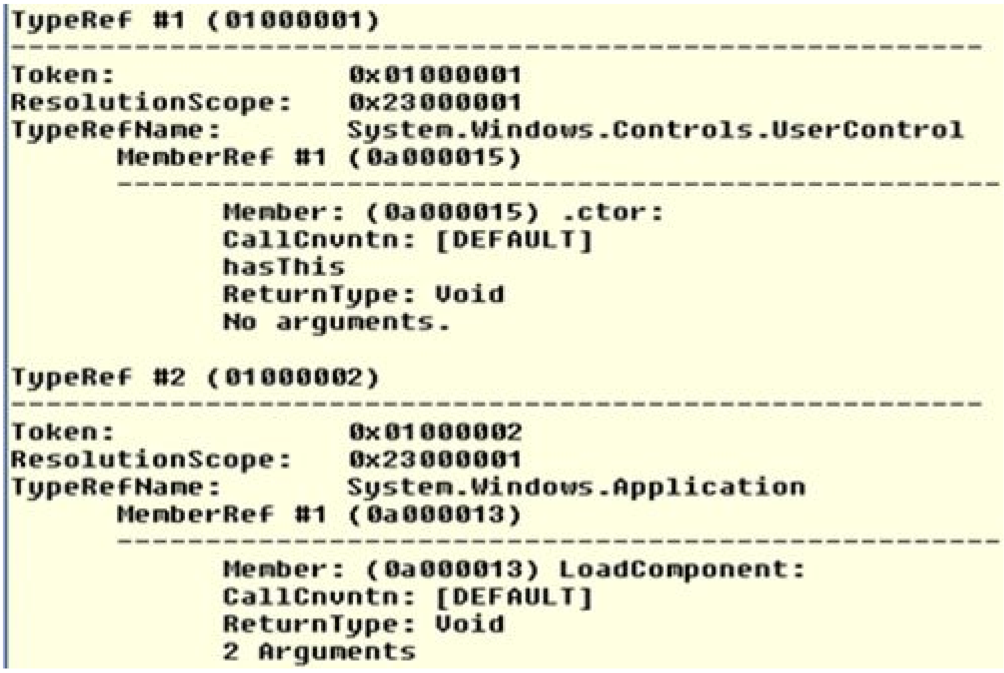
[illegible] 2 [illegible] 3 [illegible].



```
TypeDef #1 (02000002)
-------------------------------------------------------
     TypDefName: Videofile.MainPage  (02000002)
     Flags     : [Public] [AutoLayout] [Class] [AnsiClass] [BeforeF
     Extends   : 01000001 [TypeRef] System.Windows.Controls.UserCon
     Field #1 (04000001)
     -------------------------------------------------------
          Field Name: LayoutRoot (04000001)
          Flags     : [Assembly]  (00000003)
          CallCnvntn: [FIELD]
          Field type:  Class System.Windows.Controls.Grid

     Field #2 (04000002)
     -------------------------------------------------------
          Field Name: Player (04000002)
          Flags     : [Assembly]  (00000003)
          CallCnvntn: [FIELD]
          Field type:  Class System.Windows.Controls.MediaElement
```

[illegible] *2*



```
TypeRef #1 (01000001)
-------------------------------------------------------------
Token:              0x01000001
ResolutionScope:    0x23000001
TypeRefName:        System.Windows.Controls.UserControl
      MemberRef #1 (0a000015)
      -------------------------------------------------------
            Member: (0a000015) .ctor:
            CallCnvntn: [DEFAULT]
            hasThis
            ReturnType: Void
            No arguments.

TypeRef #2 (01000002)
-------------------------------------------------------------
Token:              0x01000002
ResolutionScope:    0x23000001
TypeRefName:        System.Windows.Application
      MemberRef #1 (0a000013)
      -------------------------------------------------------
            Member: (0a000013) LoadComponent:
            CallCnvntn: [DEFAULT]
            ReturnType: Void
            2 Arguments
```

[illegible] *3*

- IL code: IL[illegible] Intermediate Language [illegible] CLR [illegible]

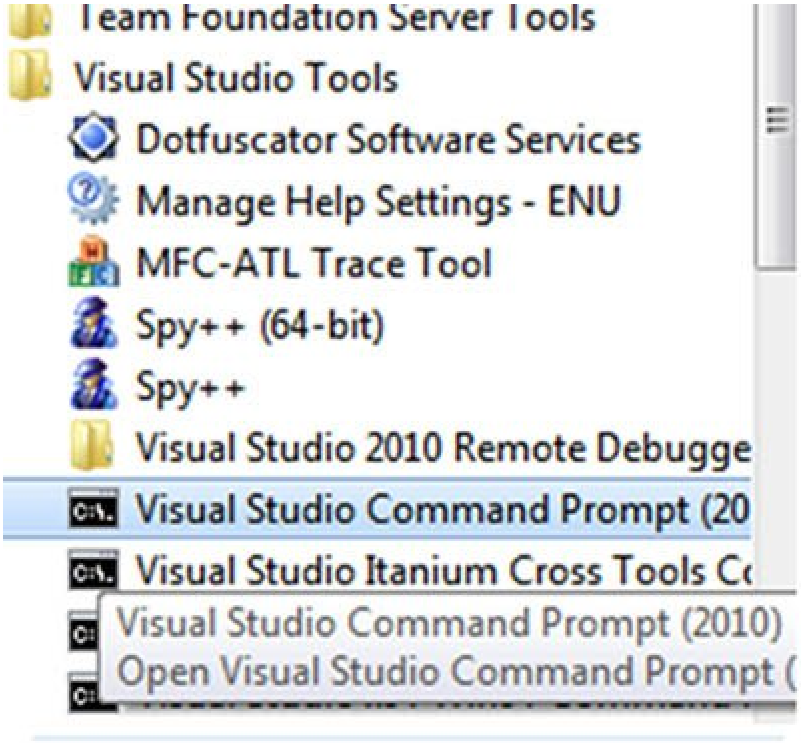
JIT Compiler

[illegible] JIT [illegible] IL [illegible] MSIL [illegible] native code [illegible]

[illegible]

[illegible]

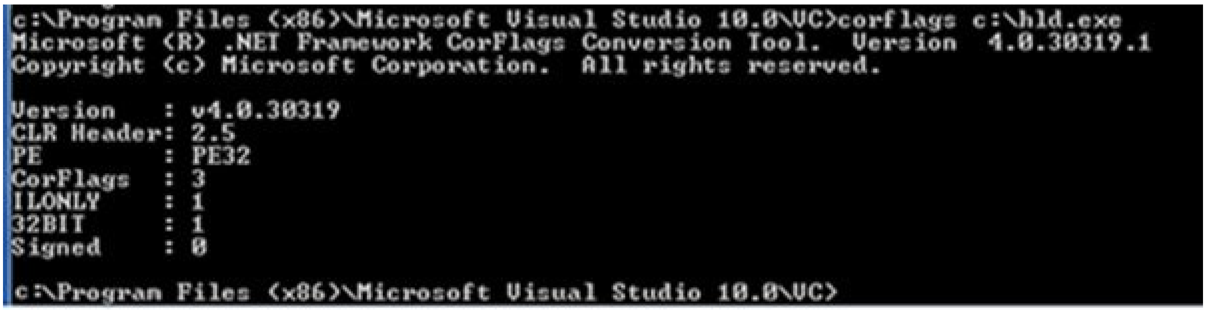
1- [illegible] command prompt [illegible] Visual studio [illegible] (4[illegible])



[illegible] 4

2- [illegible] corflags [illegible] .Net [illegible] CLR [illegible] corflags [illegible] corflags [illegible] ([illegible]5 [illegible].)

corflags c:\hld. exe



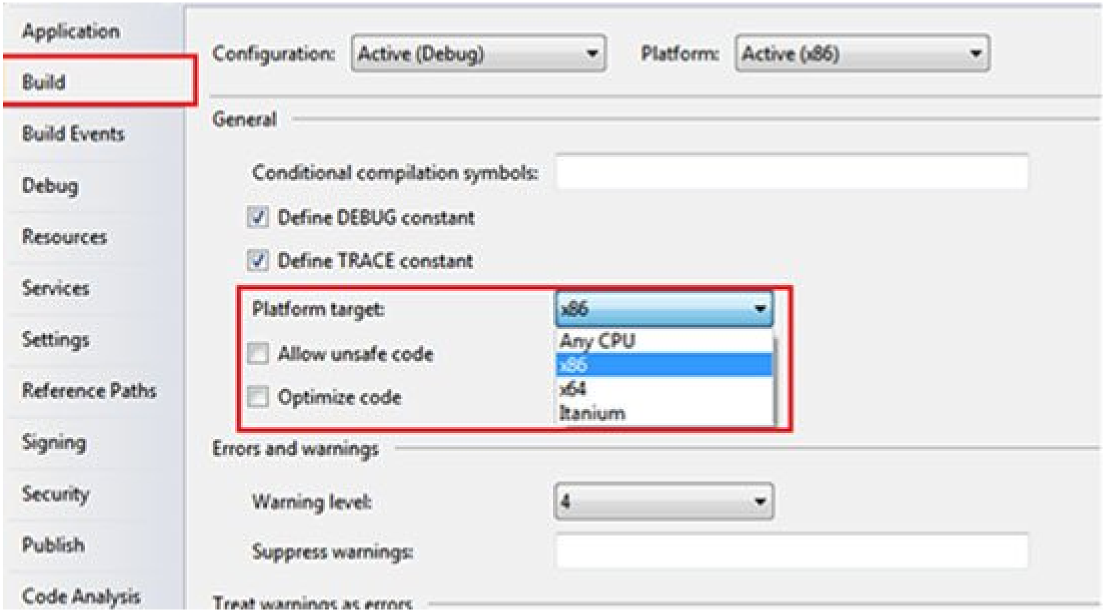
```
c:\Program Files (x86)\Microsoft Visual Studio 10.0\VC>corflags c:\hld.exe
Microsoft (R) .NET Framework CorFlags Conversion Tool.  Version  4.0.30319.1
Copyright (c) Microsoft Corporation.  All rights reserved.

Version   : v4.0.30319
CLR Header: 2.5
PE        : PE32
CorFlags  : 3
ILONLY    : 1
32BIT     : 1
Signed    : 0

c:\Program Files (x86)\Microsoft Visual Studio 10.0\VC>
```

[illegible] 5

[illegible] 5 [illegible] PE [illegible] 32BIT [illegible] 5 [illegible] 32 [illegible] x86 [illegible] PE [illegible] PE32+ [illegible] 32BIT [illegible] 0 [illegible] 64 [illegible] 6[illegible]

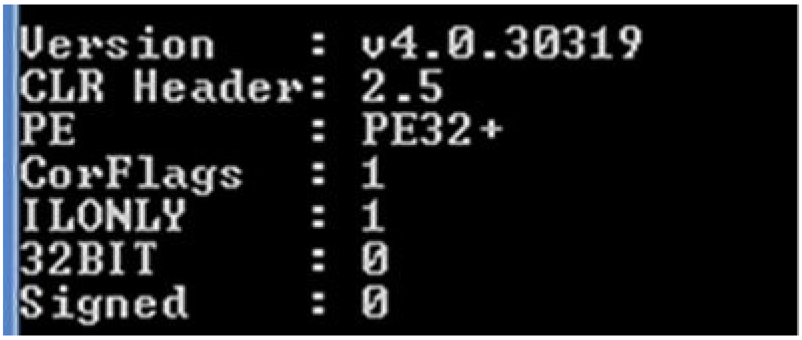


Configuration: Active (Debug)
Platform: Active (x86)
Conditional compilation symbols:
☑ Define DEBUG constant
☑ Define TRACE constant
Platform target: x86
☐ Allow unsafe code
☐ Optimize code
Warning level: 4
Suppress warnings:

[illegible] 6

[illegible] 6[illegible] platform target [illegible] x64 [illegible] 64 [illegible]. [illegible] corflags [illegible] 7[illegible]. [illegible] 32 [illegible] 64 [illegible]. [illegible] Is64BitOperatingSystem [illegible]. [illegible] 64 [illegible] true [illegible].

```
Console. WriteLine(Environment. Is64BitOperatingSystem);
```



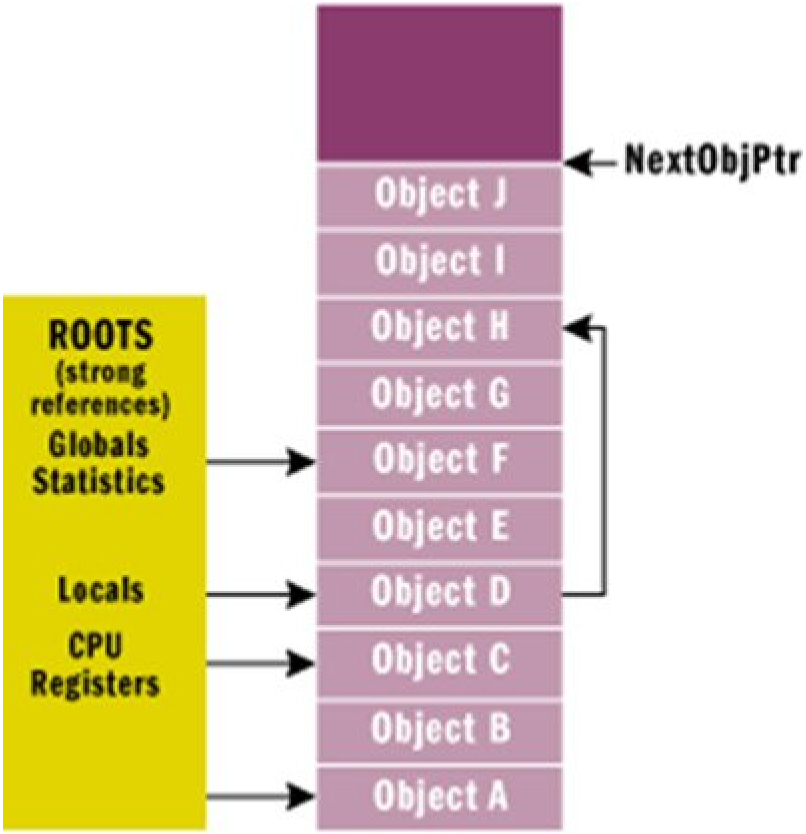
```
Version    : v4.0.30319
CLR Header: 2.5
PE         : PE32+
CorFlags   : 1
ILONLY     : 1
32BIT      : 0
Signed     : 0
```

[illegible] 7

[illegible]

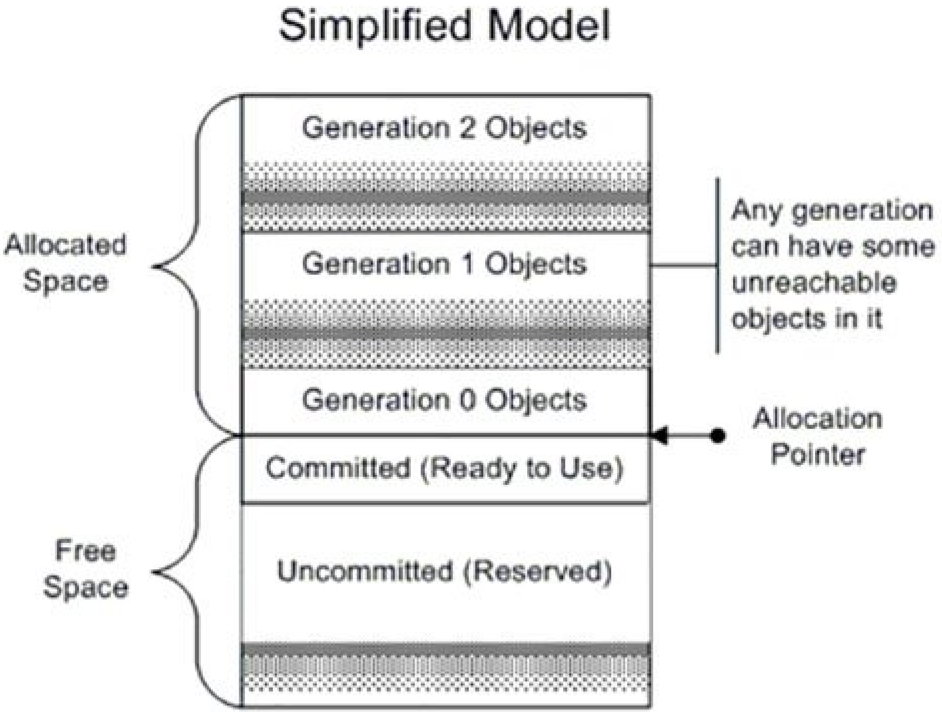
[illegible] CLR[illegible]. [illegible] garbage collection [illegible]. [illegible] runtime [illegible]. managed heap [illegible]. managed heap [illegible] heap [illegible]. [illegible] managed heap [illegible] manage heap [illegible].

base [illegible] managed heap [illegible]. [illegible] garbage collector ([illegible]) [illegible]. [illegible] garbage collector [illegible]. [illegible] 8 [illegible] Heap [illegible].



[illegible] 8

[illegible] managed heap [illegible] unmanaged heap [illegible] runtime [illegible]. [illegible] stack [illegible]. [illegible]. 9 [illegible] Managed Heap [illegible].



[illegible] 9

[illegible] CLR [illegible] CLR [illegible] CLR [illegible] CLR [illegible] memory management [illegible] CLR [illegible] Garbage Collection [illegible] CLR [illegible] Heap [illegible] garbage collection [illegible]:

-1 [illegible] threshold [illegible].

-2 [illegible] garbage collection [illegible].

-3 [illegible].

Garbage Collection [illegible]

[illegible] Grabage Collection [illegible] GC [illegible] GC [illegible] GC [illegible] GC [illegible] Heap [illegible] ([illegible]) [illegible] GC. Collect [illegible] GC [illegible] Nothing [illegible].

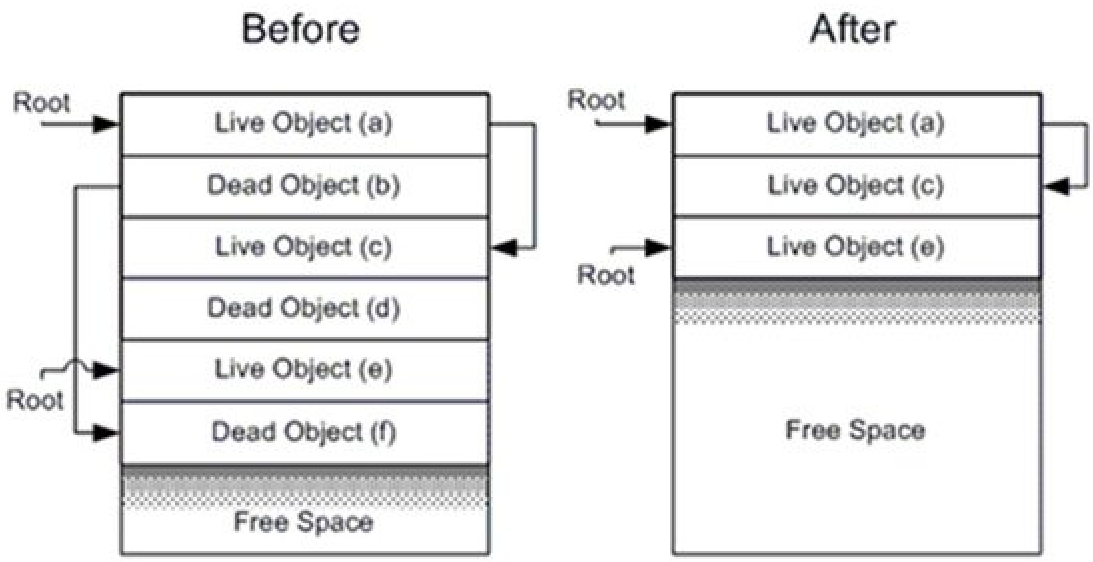
[illegible] GC [illegible] CLR [illegible] Root [illegible] managed heap [illegible] heap [illegible]

[illegible] heap [illegible] null [illegible] CLR [illegible] JIT [illegible] active [illegible] garbage collector [illegible]: Strong reference [illegible] walk reference.

GC [illegible]

[illegible] GC [illegible] Garbage [illegible] heap [illegible] heap [illegible] Garbage Collection [illegible] GC [illegible] GC [illegible] garbage [illegible].

[illegible] garbage [illegible] GC [illegible] GC [illegible] GC [illegible] generations [illegible] GC [illegible] ([illegible]) [illegible] managed heap [illegible] GC [illegible] GC [illegible] 10 [illegible].



[illegible] Garbage collection [illegible] GC [illegible] Out Of Memory Exception [illegible] try/catch [illegible] CLR [illegible].

[illegible]

[illegible].

[illegible] CLR [illegible]. [illegible] Garbage collection [illegible]. [illegible] GC [illegible].

[illegible] GC [illegible] Weak Reference [illegible] Generations [illegible] ... [illegible].

[illegible]

1 - [illegible]. [illegible] CUI ([illegible] Character User Interface) [illegible]. [illegible] GUI ([illegible] Graphic User Interface) [illegible].

2 - [illegible] 32 [illegible] 64 [illegible]. [illegible] 32 [illegible]. [illegible] 32 [illegible] 64 [illegible].

[illegible]:
[illegible]
[illegible]:
[illegible]
[illegible]:
22:31 - 11/05/1394
[illegible]:
Managed Module - Garbage collection - [illegible]

[illegible]: https://www.shabakeh-mag.com/workshop/1130