

C++ , Object Pascal

1

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Object Pascal C++

Object Oriented

()
(Case Study)

Object Pascal OO

Object Pascal C++

C++ , Object Pascal , Delphi , OOP:

.1

2

(OOA/OOD)

(OOP)

Object C++

Borland Delphi

Pascal

C++

Object Pascal

aboazar@algopars.ir¹
Software Development²

1

(Visual)

.2

Object Model

OO

6 5 4 3

Object

Heap, Stack

6

Plain Object Model

Object Reference Model

Heap

7

object

Plain Object Model C++

Object Reference Model Pascal

Pointer

()

Plain Object Model

()

Object Reference Model

Pointer

Object Reference Model

.3

Data Type

-
- Abstraction³
 - Hiding⁴
 - Inheritance⁵
 - Polymorphism⁶
 - Reference⁷

Object Pascal C++

- 1. Myclass obj ;
- 2. Obj.MyMethod();

Instance

Stack

Myclass

obj

MyMethod

obj

MyMethod

obj

Object Pascal

- 1. Var
- 2. obj: Myclass;
- 3. begin
- 4. obj := Myclass.Creat;
- 5. obj.MyMethod;

Myclass

C++

MyMethod

C++

obj .

C++

obj

Object Pascal

()

⁸

Creat

obj

MyMethod

obj

begin

⁹

.4

Constructor ⁸
Syntax Error ⁹

(Allocate)
C++

Stack 10

Borland Delphi Object Pascal 11

()

Owner

Owner

Check Box

... , Button

(Check Box , Button)
TComponent

TCollection TStringList

7 (1) TComponent
7

Owner 7

Object

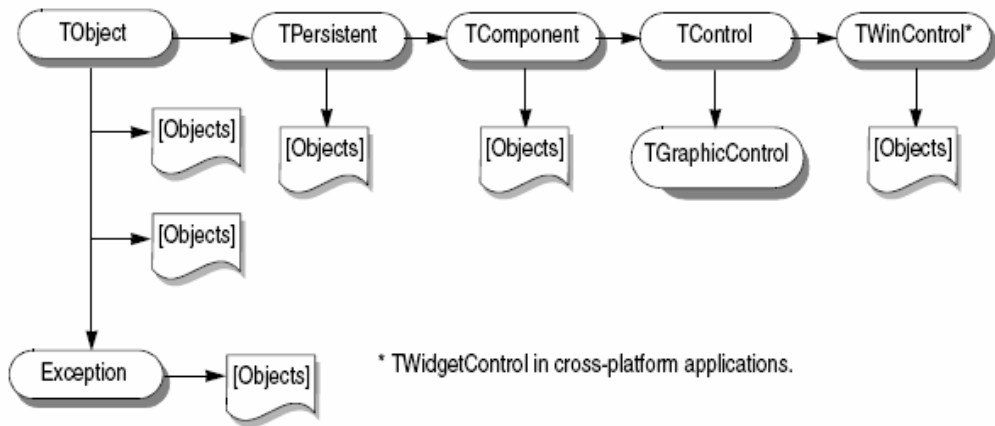
Destroy ¹⁰
Garbage ¹¹

.Net ¹² 7
 .Net Garbage Owner Collector
 GC Garbage Collector
 2006,2005,8

13

.Net
 CLR¹⁴

.Net
 Object Pascal C++
 Garbage Collector



:(1)

15

.5

OO Constructor

Initialize

Platform ¹²
 Application ¹³
 Common Language Runtime ¹⁴
 Constructor and Destructor ¹⁵

		C++
		C++
()
Constructor		Object Pascal
)	TObject	Creat
	(TObject
		Object Pascal
		Destructor
)		16 (
	17	
...	Scope	C++
	Destructor	
	Destroy	Object Pascal
		Free
Free		
	Owner	
	C++	

18 **.6**

Object Life Time ¹⁶
Window Handles ¹⁷
Class Encapsulation ¹⁸

Private , Protected , Public

OOP

19

- : Public
 - : Protected
 - : Private
- C++

Private
C++

by pass
C++

Friend
Friend

private protected

Private protected

Object Pascal
20

Automated
RTTI ²¹

Published
OLE Automation

Published
Automated

.7

C++ Object Pascal
22

Object Pascal C++
C++

h)

23

(CPP

-
- Visibility ¹⁹
 - Unit ²⁰
 - Run Time Type Information ²¹
 - Header File ²²
 - Compilation ²³

Unit
Implementation

Object Pascal
Interface

Uses

8

OOP

Inheritance

26

25

Sub

Classing, Inheritance, Derivation

Derived Class, Child Class, Subclass

Bass Class, Parent Class, Super Class

Private, Protected, Public

C++

Dog

Public

Private

:

Animal

Class Dog: Public Animal{

....

};

Object Pascal

Object

Pascal

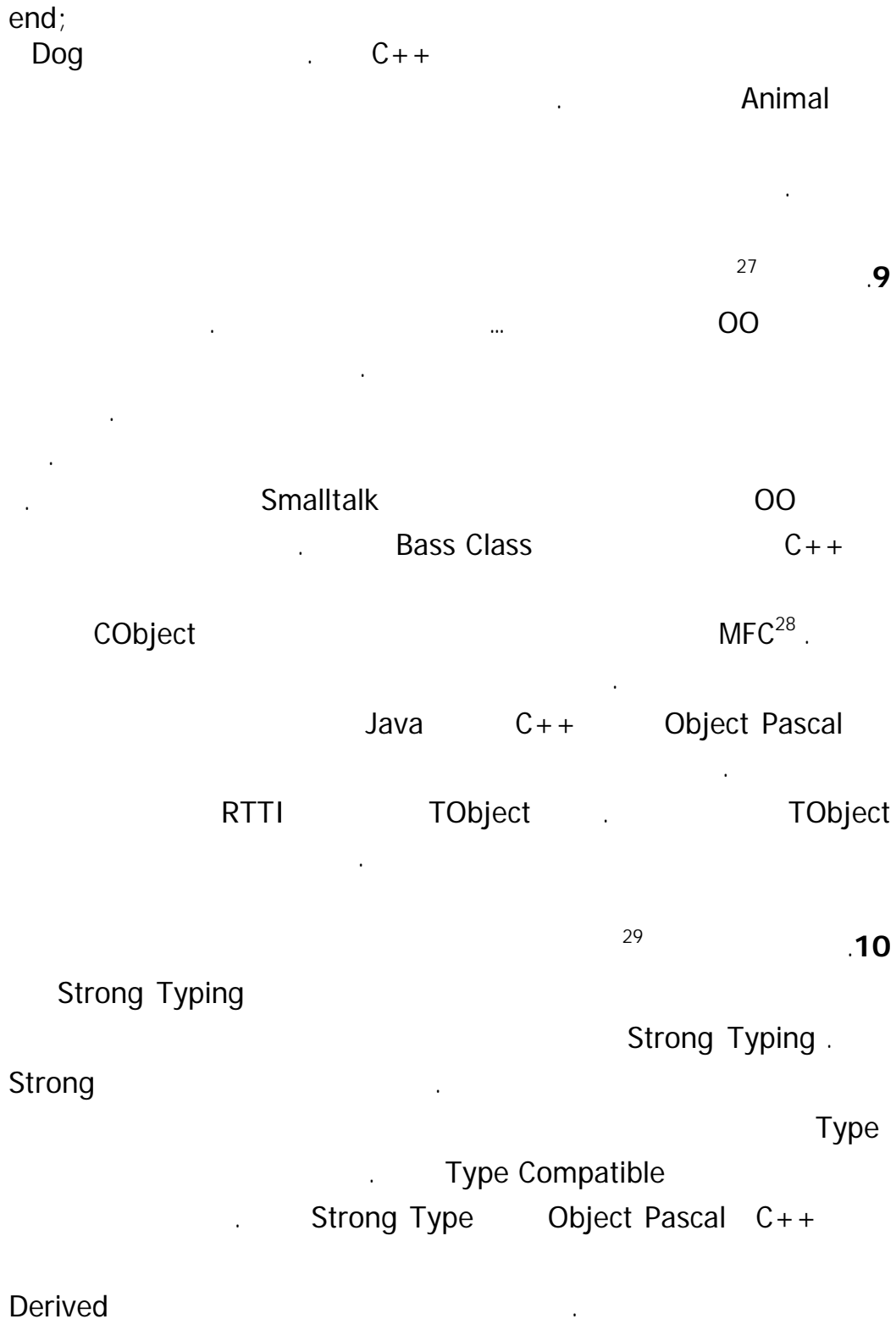
:

Type

Dog = class (Animal)

...

Linker²⁴
Generalization²⁵
Specialization²⁶



Base Class²⁷
 Microsoft Fundamental Class²⁸
 Subtype Compatibility²⁹

Bass class

Class

31

30

C++

Object Pascal

Object Reference Model

33

32

.11

Polymorphism

34

C++

Object Pascal

Virtual

Virtual Function

C++

Dynamic

35

.12

Abstraction

Bind

Pointers³⁰
 Reference³¹
 Late Binding³²
 Polymorphism³³
 Abstraction³⁴

Abstraction³⁵

() () ()
) C++
 (Virtual
 :
 Virtual Void Fun_Name () Const;
 Fun_Name
 C++
 abstract Object Pascal
 Object Pascal
 Warning
 36
 37 **.13**
)
)
 Object Pascal C++ (Object Pascal
 Object Pascal
 C++
 38 C++

Runtime Error³⁶
 Overloading³⁷
 Type Safe Linkage³⁸

Overload

39

Overload

40

.14

()
41

Object Pascal
Interface

C++

Plain Object Model

Object Reference Model

Object

C++ Pascal

C++

Object Pascal C++

(OOP)

OOP

Exception ³⁹
Multiple Inheritance ⁴⁰
Interface ⁴¹

1-Marco Cantu; Comparing OOP Languages: Java, Object Pascal, C++; Internet : www.marcocantu.com

2- Borland Software Corporation; Borland Delphi 7 Developer's Guide; Chapters : 3,4

3- Ray Lischner; Delphi in a Nutshell; O'Reilly & Associates Inc.; USA 2000; Chapter 2

4- Zarko Gajic; Fast Forward To Delphi For .Net; Internet : www.delphi.about.com

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