

«

»

-

Caché

«

»

2005

681.3.07

Caché/
2005. – 38 .

., . . , . . - : ,

- Caché.

« » .

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. . , . ()

-

© ,2005

©

,2005

Caché

« / ».

: web-

windows-

«

».

1.

Caché

2.

3.

Caché.

4.

web-

CACHÉ

« / ».

5.

windows-

CACHÉ

« / ».

6.

)

)

, windows-

Caché;

CSP-

)

Visual Basic 2005 Express

Caché;

)

- :
1. Caché .Net-binding
 2. .Net Framework 2.0¹
 3. Visual Basic 2005 Express

1. Caché

1.1 Caché-

Caché .
 Caché ().
 Caché, System Tray –
 – Caché- . , ,
 Caché . –
 , .



. 1. Caché-

, ,
 Caché. ,
 « » , Caché.

¹
 Installer 3.0, Service Pack 2 (

Приступая к работе
Запуск Cache'[CACHE51R]
Остановить Cache'
Студия
Терминал
Портал управления системой
Документация
Удаленный доступ ▶
Сервер по умолчанию [CACHE51r] ▶
О программе
Выход

.2. Caché-

1.2 Caché

Caché-

,

Caché.

	«
	»,
Caché	Caché
Caché	Caché ()
Studio	Caché Studio – , CacheObjectScript CacheBasic
	Caché – , Caché
	Caché , ,

	Caché
SQL	SQL - , ,
	, . . .
	Caché
	Caché
	Caché,

Caché 5.1

SQL

web-

1.3

Caché

(TM DM),

. Caché

Caché

Caché

Caché , ,

Caché.

, Caché

SQL .

DDL -

, Caché

Caché

SQL ,

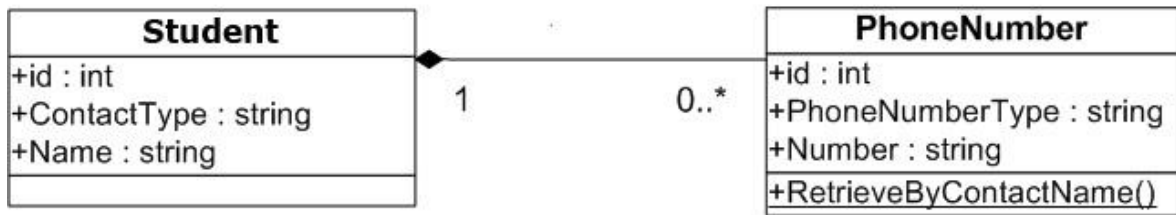
Caché.

«Studio» .

: «Student»

«PhoneNumber» .

«Student»



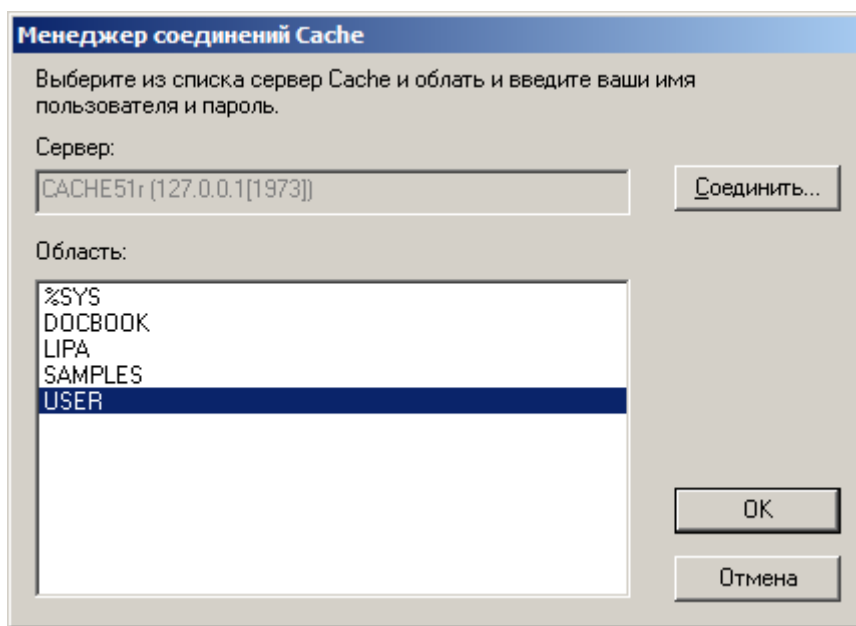
.3.

Caché

Caché Studio.

User

→



.4.

StudentContactDB (→) Caché Studio
 CacheObjectScript, Caché Basic

Cache Server Pages.

Student (→ Caché),
 «ContactStudentDB».

«Student».

«Persistent»

« ».

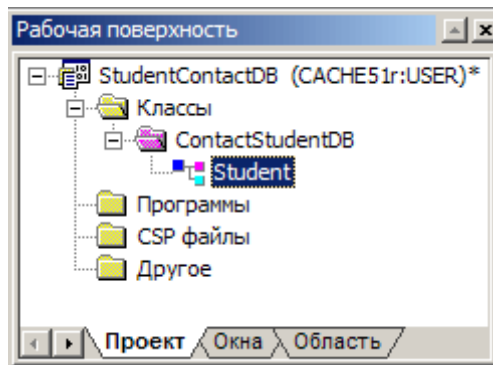
«Persistent»

».

«Student»,

«Studio»

(.5).



. 5.

```

/// Класс описывающий сущность "студент"
Class ContactStudentDB.Student Extends (%Persistent, %Populate) [ ClassType = persistent, ProcedureBlock ]
{
}

```

. 6.

% (),

25

Abstract –

ClassType –
persistent serial.

1. ClassType = datatype –
2. ClassType = persistent –
3. ClassType = serial –

: datatype,

Final - , , ...

Super - .
(
).

1.4

- , ;
 - - , .
- , , ,
.
:

Property < > as < > () []

«Name» (
, ,
« »).

» «% String» (
« ... »).

1.
« », .

«% S tring» . «C on tact t ype»,

« VALU ELIST»
: « ,HOME,MOBILE» .

«HOME»,

7.

```

// Класс описывающий сущность "студент"
Class ContactStudentDB.Student Extends (%Persistent, %Populate) [ ClassType = persistent, ProcedureBlock ]
{
    // Свойство, описывающее тип контактных данных
    Property ContactType As %String (VALUELIST = ",HOME,MOBILE");

    // Идентификатор студента (например ФИО)
    Property Name As %String [ Required ];
}
    
```

Compilation started on 10/23/2005 20:39:55
 Compiling class ContactStudentDB.Student

.7.

«PhoneNumber»,

:

1. , «Student»;
2. «Persistent»;
- 3.

PhoneNumber:

PhoneNumberType	%String	VALUELIST=,HOME,MOBILE,FX,PAGER
Number	%String	POPSPEC = USPhone()

1.5

«PhoneNumber»

«PhoneNumber» .

().

«RetrieveStudentByName» .

«name» % String



«% ID,Number,PhoneNumberType» .

:

```
Query RetriveStudentByName(name As %String) As %SQLQuery(CONTAINID = 1)
{
SELECT %ID,Number,PhoneNumberType FROM PhoneNumber
}
```

:

```
WHERE (Student->Name = :name)
ORDER BY PhoneNumberType
```

. Caché

1.6

Caché Studio

«Student», , ,

(

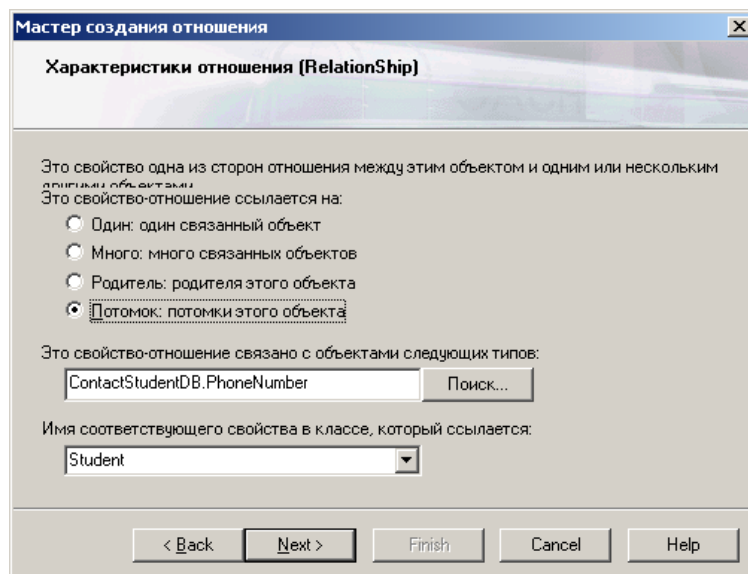
).

«PhoneNumbers»

« » .

« » .

(.8).



.8.

:

1)

-

«

:

»

2) - :

«ContactStudentDB.PhoneNumber»

3) , : «Student»

« » !

:

➤ «Student» :

Relationship PhoneNumbers As ContactStudentDB.PhoneNumber [Cardinality = children, Inverse = Student];

➤ «Phone Number» :

Relationship Student As ContactStudentDB.Student [Cardinality = parent, Inverse = PhoneNumbers];

«Studio»

1.7

Caché

Populate().

1. « » Caché- .

2. «zn»

(«>» :

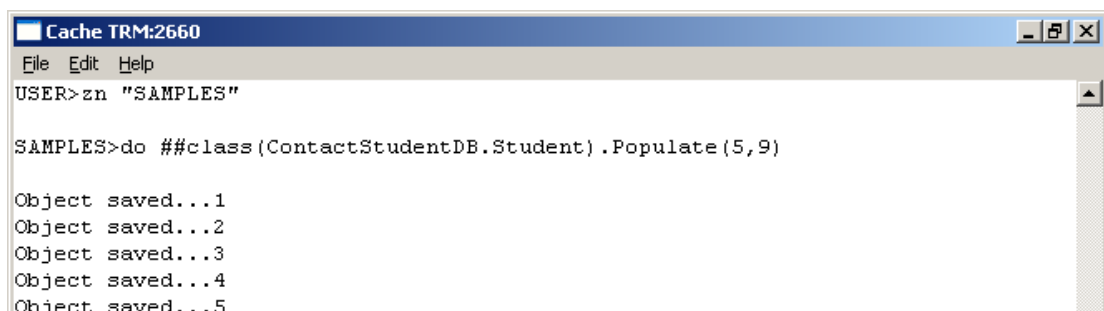
«USER» «zn USER »).

3. ,

: «do ##class(ContactStudentDB.Student).Populate(5,9)» .

4. KillExtent(): «do

##class(ContactStudentDB.Student).KillExtent()» .



```
Cache TRM:2660
File Edit Help
USER>zn "SAMPLES"

SAMPLES>do ##class(ContactStudentDB.Student).Populate(5,9)

Object saved...1
Object saved...2
Object saved...3
Object saved...4
Object saved...5
```

.9.

1.8

« », Caché-
, Caché , , SQL.

1. « », SQL

SQL ;

2. , ;

3. , « » (OpenTable).

#	ID	ContactType	Name
1	1	MOBILE	Xenia,Christen T.
2	2	MOBILE	Houseman,Gertrude P.
3	3	HOME	Burroughs,David T.
4	4	MOBILE	Paraskiv,Quigley U.
5	5	HOME	Donaldson,Nataliya U.
<i>Завершено</i>			

.10.

2. web- C A C H É

2.1 Caché Server Pages

C S P (C aché Server Pages)

w eb-

C aché.

C S P

web-

CSP-

HTML-

HTML

JavaScript-

CSP-

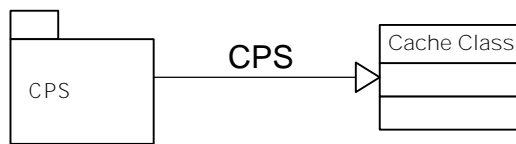
CacheObjectScript.

C S P-

Caché,

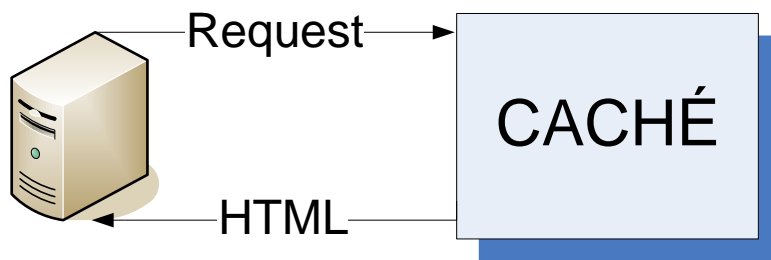
(. 11).

CSP-



.11

, HTTP, CSP- Web-
 , , , HTML-
 Caché. Caché ,
 Web- ,
 .



.12

CSP- :
 CacheObjectScript;
 , Caché JavaScript;
 CSP- ;
 HTML .

2.2

Caché
 Caché #(...)# ,
 HTML- .
 #(...)# - CSP .
 Caché.
 Caché ##(...)## . ,
 ##(...)##, CSP- .

2.3

, Caché JavaScript ,
 Caché ,
 <script> (HTML ,
). :
 Language = «C ache» - ,
 JavaScript, V B Script, S Q L .

Runat = «server» – , ,
 . «com piler»,
 .
 CacheObjectScript,

JavaScript VB Script.
 2.4 ,

#Server(.. –)#.
 :

```
<script language="CACHE" method="< >" arguments="< >" returnType="< >">
  ObjectScript
</script>
```

2.5 web-

2.5.1 web-

CSP- :

1. CSP-

2. «CSP- »

3. «Cache Server Page» « »

4. CSP-

5. «CSP\U ser»

«StudentPage.csp»

web-

:

1. , HTML- <BODY>

</BODY>

2. ()

3. «Student»

«ContactStudentDB»

«ContactType», «Name»

«% Id()»

«

(Selected Properties)»

4.

web-

:

```
<csp:object name="objForm" classname="ContactStudentDB.Student" OBJID=#(%request.Get("OBJID"))#>
```

<CSP:OBJECT>

«Student»

CSP-

CSP

1

Caché.

- , :

```
<form name="form" cspbind="objForm" cspjs="All" onsubmit='return form_validate();>
```

1. cspbind-

<CSP:OBJECT>

2. onSubmit-

JavaScript ,

«Submit»

1.

```
<csp:search name="form_search" classname="ContactStudentDB.Student" where="%Id()" options="popup,nopredicates" onselect="update">
```

:

```
<csp:search name="form_search" classname="ContactStudentDB.Student" where="ContactType" select="ContactType,Name" predicates="select">
```

2.

«Clear» :

```
<input type="button" name="btnClear" value="Clear" onclick='form_new();>
```

:

```
<input type="button" name="btnClear" value="Clear" onclick="if (form_new()==1) {self.document.location='StudentPage.csp?'};">
```

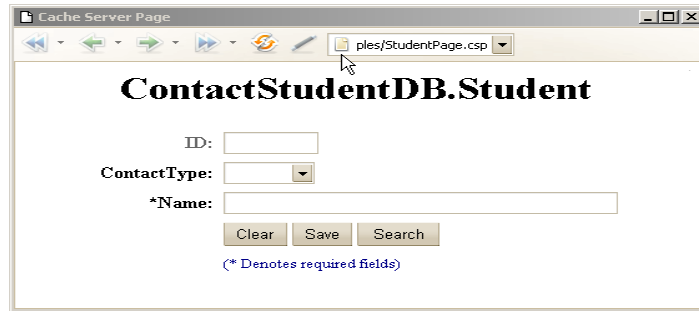
3.

«Save» :

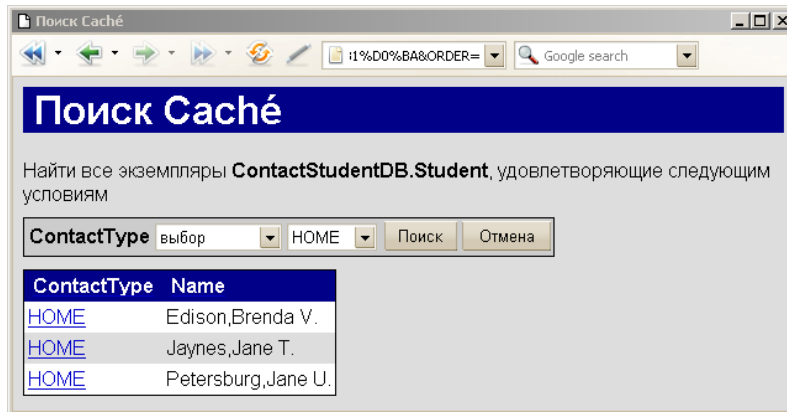
```
<input type="button" name="btnSave" value="Save" onclick='form_save();>
```

:

```
<input type="button" name="btnSave" value="Save" onclick="if (form_save()==1){self.document.location='StudentPage.csp?OBJID='+form.sys_Id.value};">
```



.13. Web-



.14.

2.5.2

1.

(< /form >)

<CSP:Query> ,

« R e t r i v e S t u d e n t B y N a m e »

«PhoneNumber» :

```
<csp:query name="query" classname="ContactStudentDB.PhoneNumber"
queryname="RetriveStudentByName" P1="#(objForm.Name)#">
```

2.

:

```
<center>
```

```
<!-- -->
```

```
<p><b>
```

```
</b></p>
```

```
<table border=1 bgcolor="">
```

```

</tr>
    <th align="left"><b>                </b></th>
    <th align="left"><b>                </b></th>
</tr>

```

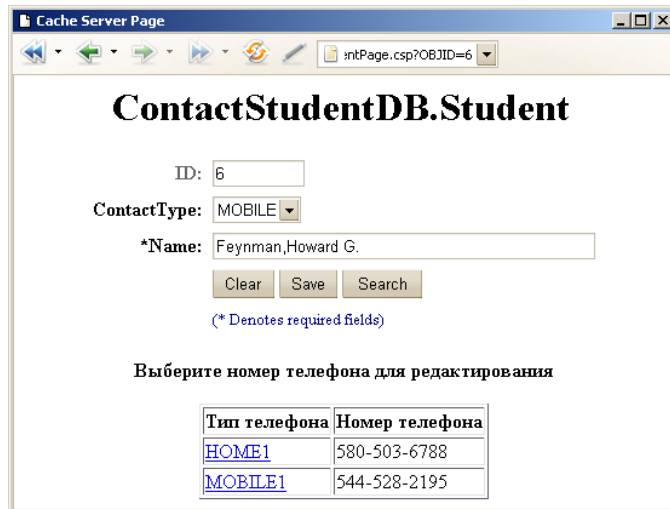
3.

```

<csp:while counter=queryRow condition=query.Next()>
<csp:object name="PhoneNumber" classname="ContactStudentDB.PhoneNumber"
OBJID=#(query.Get("ID"))#/>
<tr>
<td><a
href='PhoneNumberPage.csp?OBJID=#(PhoneNumber.%Id())#>#(PhoneNumber.PhoneNumberType
)#</a></td>
<td>#(PhoneNumber.Number)#</td>
</tr>
</csp:while>
</table>
</center>

```

«RetriveStudentbyName».



. 15.

web-

«PhoneNumberPage.csp»,

:

PhoneNumber,

Number PhoneNumberType

,

Name

ContactType Student

PhoneNumber.

3. windows -

CACHÉ

« / »

windows -

Net

Framework 2.0

Microsoft Visual Basic

2005 Express.

1. windows

MS VB.NET Express

« ».

File → New Project.

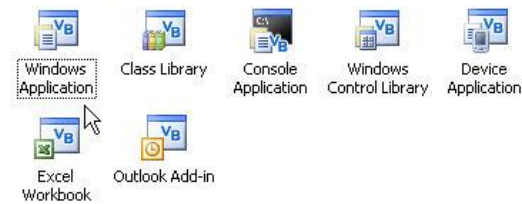
«Windows application»

(. 16).

«Name»

«CachedotNET».

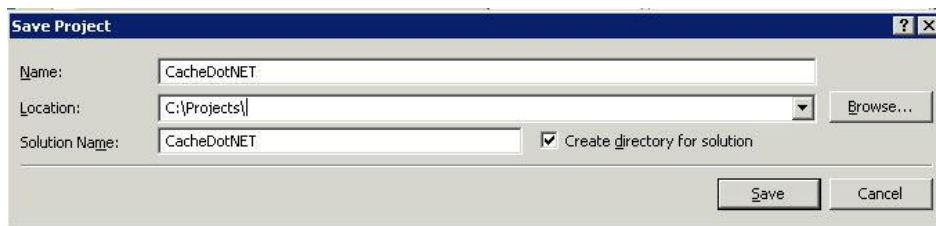
Visual Studio installed templates



. 16.

Visual Basic

«C:\Project».



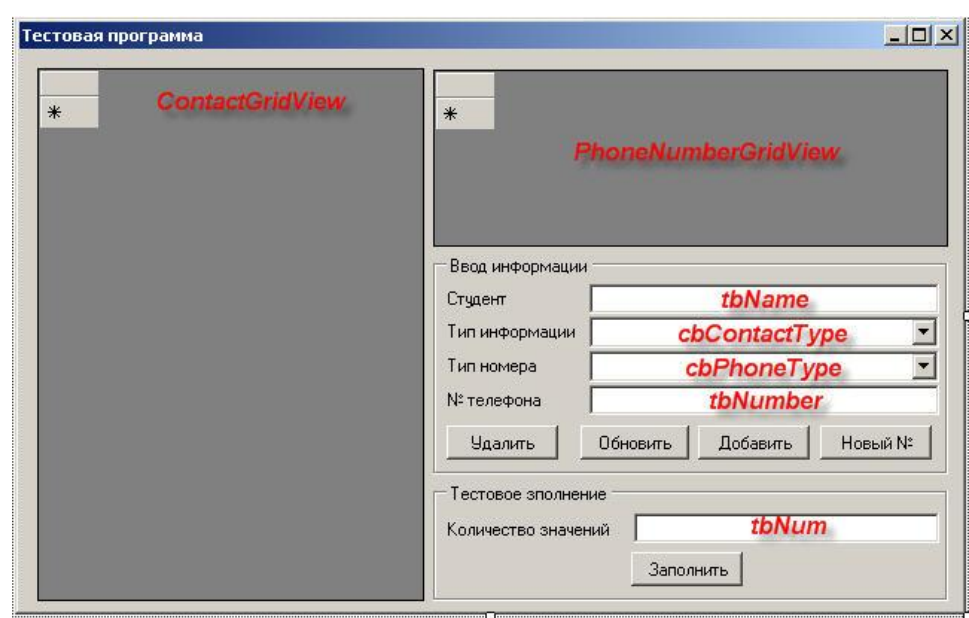
. 17.

Visual Basic

2.

«Toolbox», : Button
 «Button», DataGridView «DataGridView», TextBox «TextBox», ComboBox
 «ComboBox», GroupBox «GroupBox».

18.



.18.

(, Name)
 «Properties» .
 , 18. (, ,
 « Visible» ,
 ,
 « b tnU pdate» .)
 3.

Caché

(dll)

.Net c

Project → [] Properties.
 «References» . CacheProvider.dll
 (Add).

«Form1»,

:

```

''' <summary>
''' 1. In tersystem s
''' </summary>
Imports InterSystems.Data.CacheClient
Imports InterSystems.Data.CacheTypes

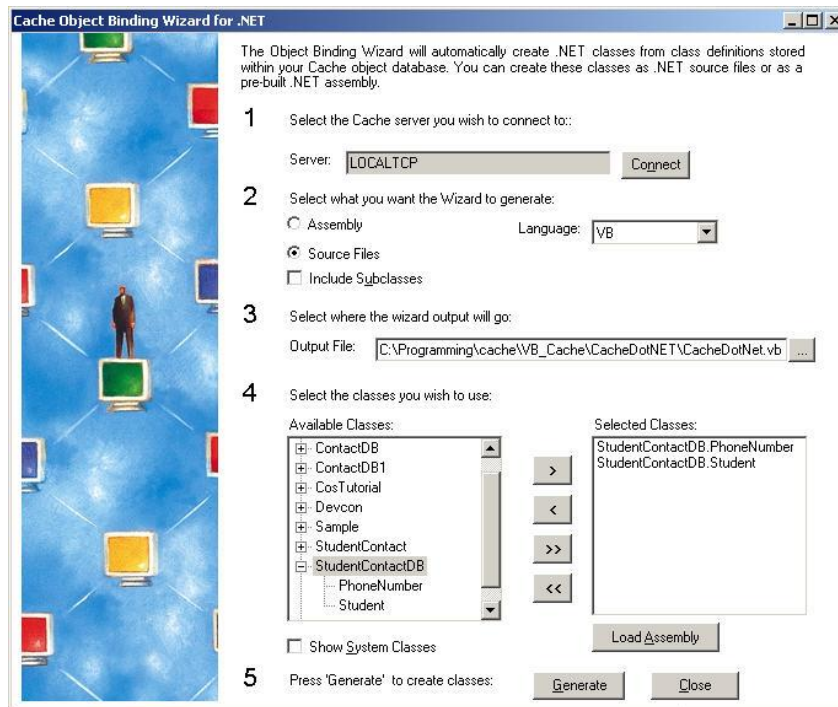
```

(Proxy - classes),

Caché Visual Basic.

4.

Cache Object Binding Wizard (. 19).



. 19. Cache Object Binding Wizard

Caché.

«USER»

: «_system» «SYS»

(

Caché

).

VB.

«Available Classes»

Caché,

ContactStudentDB) - («Selected Classes» .

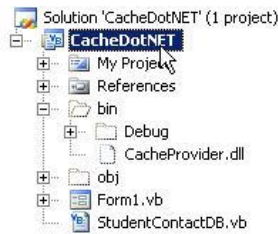
Caché .

: Project → Add Existing item... ,

Solution

Explorer

(.20).



.20 .

windows-

«StudentContactDB» Caché .

5 .

CACHÉ

CACHÉ .

Caché ,

VB.NET .

(.21)

```

Public Class Form1
    Соединение с Cache
    Private cnCache As CacheConnection

    идентификатор Студента
    Private id As String

    идентификатор номера
    Private LID As String

    Объект транзакций
    Private txCache As CacheTransaction

    Текущий (выбранный) студент
    Private CurrentContact As New CacheDotNET.StudentContactDB.Student

    Текущий (выбранный) номер
    Private CurrentPhoneNumber As New CacheDotNET.StudentContactDB.PhoneNumber

    Состояние запроса
    Private Status As CacheStatus

```

.21.

«CurrentContact» «CurrentPhoneNumber»
«Student» «PhoneNumber».
Cache Object Binding Wizard

Caché

.22.

```

3. Создание соединения
Private Sub CreateConnection()

    Try
        ''' Создание объекта Cache соединения
        Me.cnCache = New CacheConnection()
        ''' Создание строки подключения
        Me.cnCache.ConnectionString = _
            "Server = localhost;" & _
            " Port = 1972;" & _
            " Namespace = USER;" & _
            " Password = sys;" & _
            " User ID = _system;"

    Catch ex As Exception

        MessageBox.Show("Ошибка создания соединения " + ex.Message)

    End Try

End Sub

```

.22.

(Load).

Open()

CacheConnection (: cnCache.Open()),
Close() (: cnCache.Close()).

Caché. SQL- :
Select ID,Name,ContactType FROM ContactStudentDB.Student

«ContactGridV iew » (.23).

Dim sql1 As String ' sql
Dim cmdCache As CacheCommand '
Dim daCache As CacheDataAdapter '
Dim dsCache As DataSet

sql1 = "Select ID,Name,ContactType FROM ContactStudentDB.Student"

cmdCache = New CacheCommand(sql1, cnCache)
daCache = New CacheDataAdapter(cmdCache)
dsCache = New DataSet()

daCache.TableMappings.Add("Table", "Student")
daCache.Fill(dsCache, "Student")

ContactGridView.DataSource = dsCache.Tables("Student")
PhoneNumberGridView.DataSource = DBNull.Value
dsCache.Dispose()

.23.

```

''' <summary>
''' 4. Получение контактной информации о студентах
''' </summary>
''' <remarks></remarks>
Private Sub GetContactInfo()
    Dim sql1 As String
    Dim cmdCache As CacheCommand
    Dim daCache As CacheDataAdapter
    Dim dsCache As DataSet

    sql1 = "Select ID,Name,ContactType FROM StudentContactDB.Student"

    cmdCache = New CacheCommand(sql1, cnCache)
    daCache = New CacheDataAdapter(cmdCache)
    dsCache = New DataSet()

    daCache.TableMappings.Add("Table", "Student")
    daCache.Fill(dsCache, "Student")
    ContactGridView.DataSource = dsCache.Tables("Student")
    PhoneNumberGridView.DataSource = DBNull.Value
    dsCache.Dispose()

End Sub

```

.23.

Caché.

«Load»

Form1

```

Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
    CreateConnection()
    GetContactInfo()
End Sub

```

(F5).

«ContactStudentDB».

SQL-

«RetriveStudentByName».

1.5,

«PhoneNumberGridView».

«Phoneinfo».

```

Dim cmdCache As CacheCommand
Dim p1 As New CacheParameter

```

, :

```
If cnCache.State.ToString <> "Open" Then
    cnCache.Open()
End If
```

Caché.

cnCache.GetQuery

:

1. ClassName String
2. queryName String

```
cmdCache=cnCache.GetQuery("ContactStudent DB.PhoneNumber","RetriveStudentByName")
```

:

```
p1.Direction = ParameterDirection.Input
p1.CacheDbType = CacheDbType.VarChar
p1.Value = name
cmdCache.Parameters.Add(p1)
```

:

```
Dim daCache As New CacheDataAdapter(cmdCache)
Dim dsCache As New DataSet()
daCache.Fill(dsCache, "PhoneNumber")
```

:

```
PhoneNumberGridView.DataSource = dsCache.Tables("PhoneNumber")
```

:

```
If cnCache.State.ToString = "Open" Then
    cnCache.Close()
End If
```

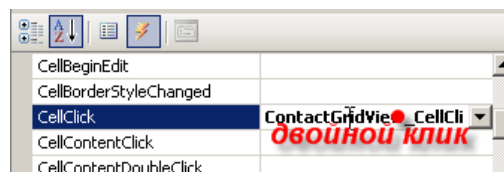
«

»

«ContactGridView»,



«CellClick» (24).



```

Private Sub ContactGridView_CellClick(
    ByVal sender As System.Object,
    ByVal e As System.Windows.Forms.DataGridViewCellEventArgs)
    Handles ContactGridView.CellClick
        «Sender»
    , «e» -

```

Try...Catch

Try

```

    , (Cells(1))
    (e.RowIndex):
    id = ContactGridView.Rows(e.RowIndex).Cells(1).Value
    :
    Phoneinfo(id)
    , :
    If Not (CurrentContact.IsConnected) Then
        cnCache.Open()
    End If

```

```

    - :
    id = ContactGridView.Rows(e.RowIndex).Cells(0).Value

```

Contacts tudent DB .Student,

```

    :
    CurrentContact = ContactStudentDB.Student.OpenId(cnCache, id)

```

« »

```

    :
    tbName.Text = CurrentContact.Name
    cbContactType.Text = CurrentContact.ContactType

```

Catch ex As Exception

End Try

```

Private Sub ContactGridView_CellClick(ByVal sender As System.Object, _
                                     ByVal e As System.Windows.Forms.DataGridViewCellEventArgs)
    ClearBox()
    Try
        id = ContactGridView.Rows(e.RowIndex).Cells(1).Value
        Phoneinfo(id)

        If Not (CurrentContact.IsConnected) Then
            cnCache.Open()
        End If

        id = ContactGridView.Rows(e.RowIndex).Cells(0).Value
        CurrentContact = StudentContactDB.Student.OpenId(cnCache, id)

        tbName.Text = CurrentContact.Name
        cbContactType.Text = CurrentContact.ContactType

    Catch ex As Exception
    End Try

```

.25. ,

(«PhoneN um berg ridV iew »).

```

Try
If cnCache.State.ToString <> "Open" Then
    cnCache.Open()
End If
LID = PhoneNumberGridView.Rows(e.RowIndex).Cells(0).Value
CurrentPhoneNumber = ContactStudentDB.PhoneNumber.OpenId(cnCache, LID)
cbPhoneType.Text = CurrentPhoneNumber.PhoneNumberType
tbNumber.Text = CurrentPhoneNumber.Number
Catch ex As Exception
    btnUpdate.Visible = False
End Try

```

« PhoneNumber »,

DeleteId(CacheConnection,

```

):
ContactStudentDB.Student.DeleteId(cnCache, id)

```

1. Name String

2. ContactType String
3. PNtype String
4. Number String

:

```
Public Sub AddContact(ByVal NName As String,
                    ByVal ContactType As String,
                    ByVal PNtype As String,
                    ByVal Number As String)
```

:

```
Try
```

:

```
If cnCache.State.ToString <> "Open" Then
    cnCache.Open()
End If
```

:

```
txCache = cnCache.BeginTransaction(IsolationLevel.ReadCommitted)
```

:

```
Dim Student As CacheDotNET.ContactStudentDB.Student
Student = New CacheDotNET.ContactStudentDB.Student(cnCache)
Dim PhoneNumber As CacheDotNET.ContactStudentDB.PhoneNumber
PhoneNumber = New CacheDotNET.ContactStudentDB.PhoneNumber(cnCache)
```

:

```
If Student.IsConnected Then
```

«Student» :

```
Student.Name = tbName.Text
Student.ContactType = cbContactType.Text
```

:

```
Status = Student.Save()
```

«Status»

-

«Student», ,

«PhoneNumber» :

```
If (PhoneNumber.IsConnected) And (Status.IsOK) Then
    PhoneNumber.PhoneNumberType = cbPhoneType.Text
    PhoneNumber.Number = tbNumber.Text
```

«Student»

«PhoneNumber»

,


```
Dim PhoneNumber As New CacheDotNET.ContactStudentDB.PhoneNumber(cnCache)
```

```
,
```

```
:
```

```
If (Contact.IsConnected) And (PhoneNumber.IsConnected) Then
```

```
,
```

```
«PhoneNumber»
```

```
:
```

```
    PhoneNumber.PhoneNumberType = cbPhoneType.Text
```

```
    PhoneNumber.Number = tbNumber.Text
```

```
    PhoneNumber.Student = Contact
```

```
    Status = PhoneNumber.Save()
```

```
    btnUpdate.Visible = False
```

```
End If
```

```
:
```

```
    txCache.Commit()
```

```
    cnCache.Close()
```

```
,
```

```
:
```

```
Catch ex As Exception
```

```
    txCache.Rollback()
```

```
    MessageBox.Show(" ")
```

```
End Try
```

```
,
```

```
,
```

```
,
```

```
OpenId(cnCache, LID).
```

```
web-
```

```
Caché.
```

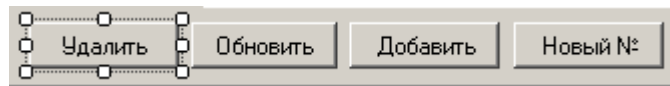
```
,
```

```
«Populate».
```

```
:
```

```
ContactDBStudent.Student.Populate(cnCache, Convert.ToInt64(tbNum.Text))
```

```
ContactStudentDB.PhoneNumber.Populate(cnCache, Convert.ToInt64(tbNum.Text))
```



« : » :	delContact() GetContactInfo()
« : » :	updContact() updPhone() GetContactInfo()
« »	AddContact(tbName.Text, cbContactType.Text, cbPhoneType.Text, tbNumber.Text) GetContactInfo()
« »	AddPhone(CurrentContact, tbNumber.Text,cbPhoneType.Text)

4.

CSP

Caché Studio

5.

1. :

2. CSP-

3. XML-

4. Visual Basic

5. Caché

		SQL-
%Binary		BINARY, BINARY VARYING, RAW, VBINARY
%Boolean	(0- , 1-)	
%Currency		MONEY, SMALLMONEY
%Date	()	DATE
%Float		DOUBLE, DOUBLE PRECISION, FLOAT, REAL
%Integer		BIT, INT, INTEGER, SMALLINT, TINYINT
%List	\$List, Caché	
%Name	« , »	
%Numeric		DEC, DECIMAL, NUMBER, NUMERIC
%Status		
%String		CHAR, CHAR VARYING, CHARACTER, CHARACTER VARYING, NATIONAL CHAR, NATIONAL CHAR VARYING, NATIONAL CHARACTER, NATIONAL CHARACTER VARYING, NATIONAL VARCHAR, NCHAR, NVARCHAR, VARCHAR, VARCHAR2
%Time		TIME
%TimeStamp	,	TIMESTAMP

2. CSP-

CSP

CSP

<CSP:XXX ... > ,

CSP
CSP-

<CSP:Object>	Caché CSP-
<CSP:Query>	CSP- SQL-
<CSP:Class>	CSP-
<CSP:If>	,
<CSP:Loop>	.
<CSP:While>	.

<CSP:Object>, <CSP:Query> <CSP:While>

<CSP:Object>

HTML-

CSP-

<CSP:object>

CLASSNAME		Caché.
NAME		,
OBJID	ID	OBJID = ,

<CSP:Query>

CSP-

CSP-

SQL-

<CSP:Query>

CLASSNAME		Caché. ,
NAME		,

		CSP-
QUERYNAME		Caché.
P1,P2,... P16		

<CSP:While >

, . , .
:
:

CONDITION	, . , .
COUNTER	1, - , 1
CURSOR	SQL- .
INTO	SQL- . , .

1. Caché .
2. Caché?
3. Caché?
4. ?
5. ?
6. ?
7. ?
8. ?
9. CSP.
10. CSP. .
11. windows- - ?
12. Caché?
13. windows- ?
14. CSP- windows- ,

1. C aché 5.0.
2. C aché, - ,
3. ,, ,, - ,2001
4. C aché 5.0.
5. C aché
6. « - » , . ,2001
7. « C aché», . .
8. C SP Q uickS tart. Q uickS tart C aché Server Pages –
W eb-
9. Pattaya.
InterS ystem s
V isual B asic, D elphi, Java, C ++ ,
C aché Server Pages. (ftp://ftp.intersys.com/pub/Pattaya/Pattaya50.zip)

Intersystems

(www.intersystems.ru)