SQL Store Procedure

1. **Creating a Store procedure**

```
Create proc [StoreProcName]
    @para1 datatype,@para2 datatype...
as
begin
    print  'Hello'
    print  'You can code here'
end
go
```

2. **Datatype:**

Number

Bit: 0 and 1 (1 bit)

Tinyint: 0 to 255 (1 byte)

Smallint: –32,768 to 32,767 (2 bytes)

Int: -2^{31} to $2^{31}-1$ (4 bytes)

Bigint: -2^{63} to $2^{63}-1$ (8 bytes)

Real: -3.4^{38} to -1.18^{38}, 0, and 1.18^{38} to 3.4^{38} (4 bytes)

Smallmoney: –214,748.3648 to 214,748.3647 (4 bytes)

Money: –922,337,203,685,477.5808 to 922,337,203,685,477.5807 (8 bytes)

String

char(n): 1 byte per character, defined by n up to a maximum of 8000 bytes

varchar(n): 1 byte per character, stored up to a maximum of 8000 bytes

text: 1 byte per character, stored up to a maximum of 2 GB

nchar(n): 2 bytes per character, defined by n up to a maximum of 4000 bytes

nvarchar(n): 2 bytes per character, stored up to a maximum of 4000 bytes

ntext: 2 bytes per character stored up to a maximum of 1 GB

Datetime

Datetime: 01/01/1753 →12/31/9999

Smalldatetime: 01/01/1900 → 06/06/2079

Date: 01/01/0001 to 12/31/9999

Time: 00:00:00.0000000→23:59:59.9999999 nanoseconds

User-defined datatype:

sp_addtype

[@typename =] type,

[@phystype =] system_data_type,

[[@nulltype =] 'null_type']

EXEC sp_addtype CMND, 'varchar(11)', 'NOT NULL'

EXEC sp_addtype NgaySinh, datetime, 'NULL'

EXEC sp_addtype SoDT, 'varchar(24)', 'NOT NULL'

EXEC sp_addtype SoFax, 'varchar(24)', 'NULL'

3. **Variable Declaration:**

Declare @VaribleName datatype

Variable name must begin with @

Declare @n int

Declare @s varchar(10)

Declare @p datetime

Declare @Sum float, @Count int

4. **If:**

```
if (a condition use '>' '<' '!=' '=' '>=' '<=')
begin
.....
....
end
else
begin
...
....
end
```

5. **While**

```
While (Condition)
begin
.......
.......
end
```

6. **Note:**

Return, break, continue

7. **Operation =:**

declare @i int

```
set @i=1
declare @v nvarchar(20)
set @v=N'Nguyễn Văn A'
declare @g datetime
set @g='10/22/2015'
```

It is also possible to assign value to a variable by query instead of set instruction

```
Declare @var1 int, @var2 nvarchar(50)
select @Var2 = HoTen, @Var1 = Tuoi
from  SV
where MaSV = 1
```

8. **Changing datatype:**

cast (@VaribleName as DataType)

Ex:

```
Declare @i int
Set @i=123
Declare @u varchar(10)
set @u=cast(@i as varchar(10))
Declare @k varchar(10)
Set @k='123'
Declare @j int
Set @j= cast(@k as int)
```

9. **case**

```
CASE [input_expression]
WHEN when_expression THEN result_expression
```

```
[ ...n ]
[ ELSE else_result_expression ]
END
Select * From NHAN_VIEN
Where datediff(yy, NgaySinh, getdate())
 > =    Case Phai
                    when ‘Nam’ then 60
                    when ‘Nu’ then 55
              End

Select MaNV, HoTen, ‘Loai’ =  Case
              when CapBac<=3 then ‘Binh Thuong’
              when CapBac is null then ‘Chua xep loai’
              else ‘Cap Cao’    End
From NhanVien
```

10. Call a Store Procedure

Exec StoreName [value of para1],[value of para2]

11. Example

Check the number to be a prime or not?

```
create proc isprime
        @n int
as
begin
        declare @i int
        set @i=2
        while (@i<=@n-1)
        begin
```

```
            if(@n%@i=0)
            begin
                print cast(@n as varchar(10)) + ' is not prime'
                return
            end
            set @i=@i+1
        end
    print cast(@n as varchar(10)) + ' is prime'
end
go
Exec isprime 10
--Compute the factorial of n
create proc factorial
        @n int
as
begin
        declare @i int
        declare @s int
        set @i=1
        set @s=1
        while(@i<@n)
        begin
            set @s=@s*@i
            set @i=@i+1
        end
        print cast(@N as varchar(5)) +'!=' +cast(@s as varchar(5))
end
```

```
go
Exec factorial 6
```

12. Returning a value from a store procedure by a output para.

-CALCULATE THE SUM OF THE PRIME NUMBERS FROM 1 TO N

```
create proc isprime
	@n int, @kq int output
as
begin
	declare @i int
	set @i=2
	while (@i<=@n-1)
	begin
		if(@n%@i=0)
		begin
			set @kq=0
			return
		end
		set @i=@i+1
	end
	set @kq=1
end
go

create proc primesum
	@n int
as
begin
```

```
        declare @i int
        declare @s int
        set @i=1
        set @s=0
        while(@i<=@n)
        begin
                declare @kq int
                exec isprime @i,@kq output
                if (@kq=1)
                        set @s=@s+@i
                set @i=@i+1
        end
        print 'Result: +cast(@s as varchar(10))
end
go
exec primesum 10
```

13. <u>Load a value from DB to assign it to a variable</u>

```
declare @VariableName1 datatype
declare @VariableName2 datatype
select  @VariableName1=column1, @VariableName2 =column2
from tables
where conditions
```

Ex: Print the teacher name of @teacherID

```
create proc GetTeacherName
        @TeacherID nchar(10)
as
begin
        declare @TeacherName nvarchar(50)
        select @TeacherName=t.name
        from teacher t
        where t.ID=@TeacherID
        print @TeacherName
end
go
exec GetTeacherName 'GV00001'
```

Exercise

A. Compute 1.2.3….@n. Return the result by output para

Create proc Factorial @n int, @f int output ……

B. Show 1! + 2!+… + @n!. Print the result on the screen

Create proc FactorialSum @n int…..

C. List the students who have passed @SubjectName.

Create proc StudentList @SubjectName nvarchar(50)……

D. Show the average grade of @StudentName. Print the result on the screen and return the result by output para

Create proc GetAverGrade @StudentName nvarchar(50), @Grade float output….

```
--Cau1:Compute 1.2.3….@n. Return the result
by output para
```

```
create proc cauA
    @n int, @kq int output
as
begin
    declare @i int
    set @i=1
    set @kq=1
    while (@i<=@n)
    begin
        set @kq=@kq*@i
        set @i=@i+1
    end
end
go
--cau 2:Show 1! + 2!+… + @n!.
--Print the result on the screen
create proc cauB
    @n int
as
begin
    declare @i int
    declare @s int
    set @i=1
    set @s=0
    while (@i<=@n)
    begin
        declare @k int
        exec cauA @i,@k OUTPUT
        set @s=@s+@k
        set @i=@i+1
    end
    print 'kq la:' +cast(@s as varchar(20))
end
```

```
go
exec cau2 9
---cau3 List the students who have passed
@SubjectName.
create proc cauC
    @SubjectName nvarchar(30)
as
begin
    select s.*
    from student s, result  r, subject su
    where s.ID=r.studentID and
r.subjectID=su.ID and
    su.name=@SubjectName and r.mark>=5 and
    r.times > = all (  select r1.times
    from result r1 where r1.studentID=s.ID and
r1.subjectID=su.ID
    )
end
go
exec cauC N'Cơ sở dữ liệu'
--Cau 4Show the average grade of
@StudentName.
--Print the result on the screen
--and return the result by output para
create proc cauD
    @StudentName nvarchar(30), @mark float
output
as
begin
        select
@mark=sum(r.mark*sub.credits)/sum(sub.credits
)
    from student s, result r, subject sub
```

```
    where s.ID=r.studentID
     and r.subjectID=sub.ID and
    s.name=@StudentName and  r.times > = all
     (select r1.times from result r1
     where r1.studentID=s.ID and
r1.subjectID=sub.ID
    )
    print @mark
end
go
declare @mark float
exec cauD N'Nguyễn Thùy Linh', @mark output
```