# Creating temporary variables

-- Creating temporary variables

-- Initialise a variable, give it a data type and an initial value

DECLARE @myvar as int = 2

-- Increase that value by 1

SET @myvar = @myvar + 1

-- Retrieve that value

SELECT @myvar AS myVariable

# Integer numbers

-- Initialise a variable, give it a data type and an initial value

DECLARE @myvar as smallint = 2000

-- Multiply that variable by 10

SET @myvar = @myvar \* 10

-- Retrieve that variable

SELECT @myvar AS myVariable

--BITS

--Bigint

--Int - up to 2,000,000,000

--Tinyint - 0-255

--Smallint - -32767 to 32768

# Non-integer numbers

-- Initialise a variable, give it a data type and an initial value

DECLARE @myvar as numeric(7,2) -- or decimal(7,2) - 5 bytes needed

-- 12345.67 is valid for the above.

-- 123456.7 is not valid

SET @myvar = 12345.67

SELECT @myvar AS myVariable

GO

DECLARE @myvar as numeric(18,8) -- or decimal(18,8) - 9 bytes needed

SET @myvar = 1000000000.12345678

SELECT @myvar AS myVariable -- gives 12346

-- 1,000,000,000.12345678 is numeric(18,8)

GO

DECLARE @myvar AS smallmoney = 123456.78917

select @myvar as myVariable -- gives 123456.7892

GO

DECLARE @myvar AS float(24) = 123456.7891 -- precise to 7 digits. -- same as REAL

Select @myvar as myVariable -- this gives 123456.8

# Mathematical functions

--Initialise a variable, give it a data type and an initial value

DECLARE @myvar as numeric(7,2) = 3

SELECT POWER(@myvar,3) -- 27

SELECT SQUARE(@myvar) -- 9

SELECT POWER(@myvar,0.5) -- square root of 3

SELECT SQRT(@myvar) -- square root of 3

GO

DECLARE @myvar as numeric(7,2) = 12.345

SELECT FLOOR(@myvar) -- this equals 12

SELECT CEILING(@myvar) -- this equals 13

SELECT ROUND(@myvar,-1) as myRound -- this equals 10

GO

SELECT PI() as myPI

SELECT EXP(1) as e

DECLARE @myvar AS NUMERIC(7,2) = -456

SELECT ABS(@myvar) as myABS, SIGN(@myvar) as mySign -- This equals 456 and -1.

GO

SELECT RAND(345) -- A random number, based on the initial seed

# Converting between number and types

-- IMPLICIT

DECLARE @myvar as Decimal(5,2) = 3

SELECT @myvar

-- explicit

SELECT CONVERT(decimal(5,2),3)/2

SELECT CAST(3 as decimal(5,2))/2

SELECT CONVERT(decimal(5,2),1000) -- this does not work

SELECT 3/2 -- EQUALS 1

SELECT 3/2.0 -- EQUALS 1.5

SELECT CONVERT(INT,12.345)+CONVERT(INT,12.7) -- This equals 24.

SELECT CONVERT(INT,12.345+12.7) -- This equals 25.

# Strings

-- char - ASCII - 1 byte

-- varchar - ASCII - 1 byte

-- nchar - UNICODE - 2 bytes

-- nvarchar - UNICODE - 2 bytes

-- ASCII: A-Z, a-z, 0-9

-- 65 97 48 32 128 (0-255)

DECLARE @chrMyCharacters as char(10)

set @chrMyCharacters = 'hello'

SELECT @chrMyCharacters as myString, len(@chrMyCharacters) as MyLength, DATALENGTH(@chrMyCharacters) as MyDataLength

-- Always prefix nchar and nvarchar values with N (capital N).

# String Functions

DECLARE @chrASCII as varchar(10) = 'hellothere'

DECLARE @chrUNICODE as nvarchar(10) = N'helloϞ'

select left(@chrASCII,2) as myASCII, right(@chrUNICODE,2) as myUNICODE

select substring(@chrASCII,3,2) as middleletters

select ltrim(rtrim(@chrASCII)) as myTRIM

select replace(@chrASCII,'l','L') as myReplace

select upper(@chrASCII) as myUPPER

select lower(@chrASCII) as myLOWER

# NULL – an introduction

declare @myvar as int

select 1+1+1+1+1+@myvar+1+1 as myCol

declare @mystring as nvarchar(20)

select datalength(@mystring) as mystring

declare @mydecimal decimal(5,2)

select try\_convert(decimal(5,2),1000)

select try\_cast(1000 as decimal(5,2))

# Joining two strings together

declare @firstname as nvarchar(20)

declare @middlename as nvarchar(20)

declare @lastname as nvarchar(20)

set @firstname = 'Sarah'

--set @middlename = 'Jane'

set @lastname = 'Milligan'

-- select @firstname + ' ' + @middlename + ' ' + @lastname as FullName

select @firstname + iif(@middlename is null, '', ' ' + @middlename) + ' ' + @lastname as FullName

select @firstname + CASE WHEN @middlename IS NULL THEN '' ELSE ' ' + @middlename END + ' ' + @lastname as FullName

select @firstname + coalesce(' ' + @middlename,'') + ' ' + @lastname as FullName

SELECT CONCAT(@firstname,' ' + @middlename, ' ' , @lastname) as FullName

# Joining a string to a number

SELECT 'My number is: ' + convert(varchar(20),4567)

SELECT 'My number is: ' + cast(4567 as varchar(20))

SELECT 'My salary is: $' + convert(varchar(20),2345.6) -- works , but not well

SELECT 'My salary is: ' + format(2345.6,'C','fr-FR')

# Setting dates and date extraction

declare @mydate as datetime = '2015-06-24 12:34:56.124'

select @mydate as myDate

declare @mydate2 as datetime2(3) = '20150624 12:34:56.124'

select @mydate2 as MyDate

select DATEFROMPARTS(2015,06,24) as ThisDate

select DATETIME2FROMPARTS(2015,06,24,12,34,56,124,5) as ThatDate

select year(@mydate) as myYear, month(@mydate) as myMonth, day(@mydate) as myDay

# More date functions

SELECT CURRENT\_TIMESTAMP as RightNow

select getdate() as RightNow

select SYSDATETIME() AS RightNow

select dateadd(year,1,'2015-01-02 03:04:05') as myYear

select datepart(hour,'2015-01-02 03:04:05') as myHour

select datename(weekday, getdate()) as myAnswer

select datediff(second,'2015-01-02 03:04:05',getdate()) as SecondsElapsed

# Date offsets

declare @myDateOffset as datetimeoffset(2) = '2015-06-25 01:02:03.456 +05:30' -- 8-10 bytes

select @myDateOffset as MyDateOffset

go

declare @myDate as datetime2 = '2015-06-25 01:02:03.456'

select TODATETIMEOFFSET(@myDate,'+05:30') as MyDateOffset

select DATETIME2FROMPARTS (2015,06,25,1,2,3,456, 3)

select DATETIMEOFFSETFROMPARTS(2015,06,25,1,2,3,456,5,30,3) as MyDateOffset

select SYSDATETIMEOFFSET() as TimeNowWithOffset;

select SYSUTCDATETIME() as TimeNowUTC;

declare @myDateOffset as datetimeoffset = '2015-06-25 01:02:03.456 +05:30'

select SWITCHOFFSET(@myDateOffset,'-05:00') as MyDateOffsetTexas

# Converting from dates to strings

declare @mydate as datetime = '2015-06-25 01:02:03.456'

select 'The date and time is: ' + @mydate

go

declare @mydate as datetime = '2015-06-25 01:02:03.456'

select 'The date and time is: ' + convert(nvarchar(20),@mydate,104) as MyConvertedDate

go

declare @mydate as datetime = '2015-06-25 01:02:03.456'

select cast(@mydate as nvarchar(20)) as MyCastDate

select try\_convert(date,'Thursday, 25 June 2015') as MyConvertedDate

select parse('Thursday, 25 June 2015' as date) as MyParsedDate

select parse('Jueves, 25 de junio de 2015' as date using 'es-ES') as MySpanishParsedDate

select format(cast('2015-06-25 01:02:03.456' as datetime),'D') as MyFormattedLongDate

select format(cast('2015-06-25 01:02:03.456' as datetime),'d') as MyFormattedShortDate

select format(cast('2015-06-25 01:59:03.456' as datetime),'dd-MM-yyyy') as MyFormattedBritishDate

select format(cast('2015-06-25 01:02:03.456' as datetime),'D','zh-CN') as MyFormattedInternationalLongDate