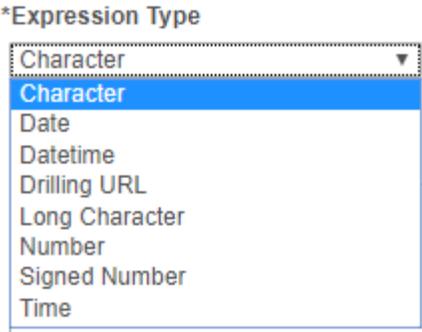
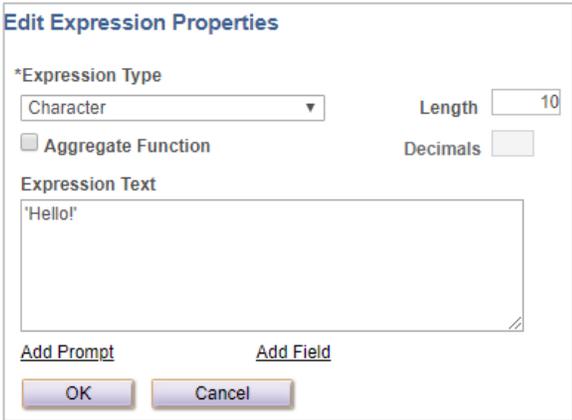
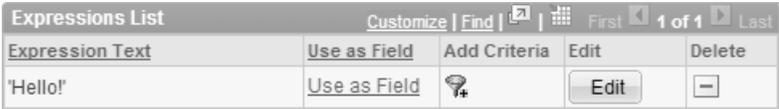


An **EXPRESSION** utilizes special query functions to manipulate the appearance of data in your output or criteria. Expressions can be used one of two ways: to display a calculated field, or to restrict the output via a more complex criterion.

Procedure	
1.	Click the Expressions tab.
2.	Click the Add Expression button.
3.	<p>In the Expression Type box, choose the type of data that your expression will create. The most common data types used will be:</p> <ul style="list-style-type: none"> • “Character” – if your data will be letters, numbers, or a combination of both. • “Date” – if your data will create a full date (including month, day, and year). • “Number” – if your data will create a number or decimal that will be operated on in the query (such as adding, summing or averaging).
	
4.	<p>Enter the Length and Decimal values if required:</p> <ul style="list-style-type: none"> • If using a “Character” type, Length is the maximum number of characters in the data. Decimals is not required. • If using a “Date” type, neither is required. • If using a “Number” type, Length is the total number of digits, including decimal places; Decimals is the number of decimal places. (Ex: a dollar amount of 15345.00 would have a Length of 7 and a Decimal of 2.)
5.	<p>Enter the Expression Text. (See the following pages for specific expression text.) For example:</p> 
6.	Click OK.
7.	<p>At this point, your expression is part of the query like any other field. You can add it as a column to your results by choosing <u>Use as Field</u>, or you can add a criteria on it by clicking the criteria funnel  :</p> 
8.	<p>Tips: Character constants have to be delimited by single quotes (e.g. 'FAC'); don't use double quotes in your expressions. In the function descriptions below, brackets [] mean optional values.</p>

IF-THEN-ELSE FUNCTION

DECODE

DECODE can be used as a simple “If-Then-Else” statement to test one field against one or more values.

SYNTAX

```
DECODE( expression , searchfor , result [, searchfor , result]... [, default] )
```

PARAMETERS

expression - the expression or field that you are testing
searchfor - the value that is compared against the *expression*
result - the value that is returned/displayed if *expression* = *searchfor*
default - (*optional*) the value that is returned when *expression* does not match any *searchfor*

EXAMPLE

```
DECODE (A.POSN_TYPE, 'FAC', 'Faculty', 'STF', 'Staff', 'STU', 'Grad Student', 'Temp')
```

CASE

CASE may be used for a more intricate If-Then-Else test, where multiple expressions, fields, or combinations of fields need to be tested at the same time – or when the fields need to be tested against other expressions or fields.

SYNTAX

```
CASE [expression]
  WHEN condition THEN result
  [WHEN condition THEN result]...
  [ELSE default]
END
```

PARAMETERS

expression - (*optional*) the field or expression to test, *only if* all WHEN statements are testing the same expression. This is similar to using the DECODE function.
condition - the value or full expression/field to test. Each *condition* must be the same datatype. Conditions must be listed in order of importance; once one *condition* is satisfied, its *result* is returned and no other *condition* will be tested.
result - the value that is returned/displayed if *condition* is satisfied.
default - (*optional*) the value that is returned when none of the *conditions* is satisfied.

EXAMPLES

```
CASE A.POSN_TYPE
  WHEN 'FAC' THEN 'Faculty'
  WHEN 'STF' THEN 'Staff'
  WHEN 'STU' THEN 'Grad Student'
  ELSE 'Temp'
END
```

```
CASE
  WHEN A.POSN_CATEGORY = 'RES' THEN 'Research Faculty'
  WHEN A.POSN_TYPE = 'FAC' THEN 'Non-Research Faculty'
  WHEN A.POSN_TYPE = 'STF' THEN 'Staff'
  WHEN A.PAYGROUP = 'MGW' OR A.JOBCODE = '100029' OR
    A.JOBTITLE LIKE '%WS' THEN 'Student'
  WHEN A.JOBTITLE LIKE '%(SP)' THEN 'Special Pay'
  WHEN A.PAYGROUP = 'BIT' THEN 'Temp'
  ELSE A.JOBTITLE
END
```

DATE/TIME FUNCTIONS

SYSDATE (*current date/time*)

SYSDATE returns the current day and time.

SYNTAX

SYSDATE

PARAMETERS

There are no additional parameters for this function.

EXAMPLES

`CAST(SYSDATE AS TIMESTAMP)` → *returns current day and time*

`TRUNC(SYSDATE)` → *returns the current day only, without the time*

`TRUNC(SYSDATE)+7` → *returns the date for one week from the current day, without the time*

Add or Subtract Days

To add or subtract days from a date field, use the traditional (+) and (-) operators.

SYNTAX

date + days *or*
date - days

PARAMETERS

date - any field of date format.

days - the number of days to add or subtract.

EXAMPLES

`A.EFFDT + 7` → *returns seven days after the effective date*

`A.EFFDT - 7` → *returns seven days prior to the effective date*

NOTE

- When using a *datetime* field, remember the impact of time. For example, 10/10/2015 12:00pm + 7 will yield 10/17/2015 12:00pm. To remove the time portion of a *datetime* field, use `TRUNC`.

ADD_MONTHS

ADD_MONTHS returns a date at the specified number of months in the past or future.

SYNTAX

ADD_MONTHS (date, months)

PARAMETERS

date - any field of date format.

`months` – the number of months to add (positive number) or subtract (negative number).

EXAMPLES

`ADD_MONTHS (A.EFFDT, 1)` → returns one month from the effective date

`ADD_MONTHS (A.EFFDT, -1)` → returns one month prior to the effective date

NOTES

- If the calculation returns a date that doesn't exist, it will be rounded to the last day of that month. For example, adding one month to 1/30/15 will return 2/28/15.
- When using a *datetime* field, remember the impact of time. To remove the time portion of a *datetime* field, use `TRUNC`.

TRUNC (truncate date/time field)

`TRUNC` can be used to truncate a date or datetime field to a specific unit of measure.

SYNTAX

`TRUNC (field [, 'format'])`

PARAMETERS

`field` – a field or expression of *date* or *datetime* format that you wish to truncate.

`format` – (*optional*) indicates how the field should be truncated according to the following options in the following table.

EXAMPLES

To truncate to...	Use format...	Example	11/28/2015 12:05:03.2314 becomes...
Day (remove the time)	(none)	<code>TRUNC (A.LASTUPDDTTM)</code>	11/28/2015
Month	MONTH	<code>TRUNC (A.LASTUPDDTTM, 'MONTH')</code>	11/01/2015
Year	YEAR	<code>TRUNC (A.LASTUPDDTTM, 'YEAR')</code>	01/01/2015
Hour	HH	<code>TRUNC (A.LASTUPDDTTM, 'HH')</code>	11/28/2015 12:00
Minute	MI	<code>TRUNC (A.LASTUPDDTTM, 'MI')</code>	11/28/2015 12:05

Reformatting Date Fields

Using expressions, you can easily reformat a date field to display differently. Because PeopleSoft stores different date fields in different ways, you may need to translate the date into a different data type first.

SYNTAX

- If the date field is stored in PeopleSoft as a “**date**” type, such as an Effective Date:
`TO_CHAR (TO_DATE (field), 'format')`
- If the date field is stored in PeopleSoft as a “**time**” type, such as Course Session Start Time:
`TO_CHAR (TO_TIMESTAMP (field, 'HH24.MI.SS.FF'), 'format')`
- If the date field is stored as plain text, such as Last Updated Date/Time, you must specify its existing format before reformatting it:
`TO_CHAR (TO_DATE (field, 'currentformat'), 'format')`

PARAMETERS

The *format* must be in single quotes and specifies the formatting you'd like to apply to the date:

Date Code	Meaning	Date Code	Meaning
YYYY	4-digit year	DY	Abbreviated name of day.
YY	2-digit year	HH	Hour of day (1-12)
MM	Month (01-12; JAN = 01)	HH24	Hour of day (0-23)
MON	Abbreviated name of month	MI	Minute (0-59)
DAY	Name of day	SS	Second (0-59)
DD	Day of month (1-31)	AM	Meridian indicator

EXAMPLES

For an Effective Date of 2015-01-06:

```
TO_CHAR(TO_DATE(A.EFFDT), 'YYYY')      -> 2013
TO_CHAR(TO_DATE(A.EFFDT), 'MON DD, YYYY') -> Jan 6, 2013
TO_CHAR(TO_DATE(A.EFFDT), 'MM/DD/YYYY') -> 01/06/2013
```

STRING FUNCTIONS

|| (concatenate)

|| (two vertical bars) may be used to concatenate any number of strings, fields, and expressions together.

SYNTAX

```
expression || expression [|| expression]...
```

PARAMETERS

expression - a field, string (in single quotes), or expression. Multiple pieces may be concatenated together by using the vertical bars multiple times

EXAMPLE

```
A.NW_POSN_TYPE || '/' || A.NW_POSN_CATEGORY → returns a value like FAC/REG
```

REPLACE

REPLACE searches for specific text within a field and replaces it with something else.

SYNTAX

```
REPLACE(expression, searchfor [, replacewith])
```

PARAMETERS

expression - the field or expression that you are looking to replace within
searchfor - the value you are looking for
replacewith - (*optional*) if *searchfor* is found, it will be replaced with *replacewith*

EXAMPLE

```
REPLACE(A.NW_EMAIL_ADDRESS, 'northwestern.edu', 'n...') → returns a value like j-smith@n...
```

SUBSTR (substring)

SUBSTR finds and extracts only a specific part of the data field or expression text.

SYNTAX

SUBSTR(expression, startposition [, length])

PARAMETERS

expression – the field or expression that you are looking to extract a piece from.

startposition – the position of the character you want to start at, beginning with 1. A positive number *n* will begin at the *n*th character from the left; a negative number *-n* will begin at the *n*th character from the right.

length – (optional) the number of characters to return. If not provided, the rest of the characters to the end of the string will be included.

EXAMPLE

SUBSTR(A.DEPTID, 1, 4) → returns the first four digits of the department number

Constants

A constant may be added as an expression by simply enclosing the text in *single* quotes.

SYNTAX

'constant'

PARAMETERS

constant – the text that you want to display. Note that you *cannot* use quotation marks directly. To include a single or double quote, use CHR(34) or CHR(39) respectively, utilizing the || function.

EXAMPLES

'Employee' → returns **Employee** for each row of data

CHR(39) || 'Employee' || CHR(39) → returns **"Employee"** for each row of data

NOTE

- As illustrated above, the || (concatenate) function can be combined with strings, field names, and other expressions to join different pieces of data into one expression.

Other String Functions

Expression	Description
INITCAP(field)	Capitalizes the first letter of each word.
LOWER(field)	Converts the entire field to lowercase.
UPPER(field)	Converts the entire field to uppercase.

LTRIM(field [, totrim]) RTRIM(field [, totrim]) TRIM(field [, totrim])	Removes characters from the left, right, or both sides of a field respectively. If <code>totrim</code> is omitted, leading or trailing spaces will be removed. Otherwise, will remove the <code>totrim</code> character that occurs at the beginning or end of string.
%OPERATORID	The myHR UserID or NetID of the current user.

NUMERICAL & MATHEMATICAL FUNCTIONS

Rounding Functions

Expression	Description
CEIL(field)	Rounds <i>up</i> to the nearest integer.
FLOOR(field)	Rounds <i>down</i> to the nearest integer.
ROUND(field [, decimal_places])	Rounds the field to the indicated number of decimal places. If <code>decimal_places</code> is omitted, it rounds to the nearest whole number.

Comparative Functions

Expression	Description
GREATEST(field1, field2, ...)	Returns whichever field in the list has the greatest value.
LEAST(field1, field2, ...)	Returns whichever field in the list has the least value.

Mathematical Functions

Expression	Description
ABS(field)	Returns the absolute value.
MOD(field1, field2) or REMAINDER(field1, field2)	Returns the remainder of <code>field1</code> divided by <code>field2</code> .

Aggregate Functions

Although aggregate functions can be selected on the Fields tab in Query Manager, creating an expression for an aggregate function allows your query to retain access to the regular field value. This is useful if you need to use that field value as a Criteria, or if you wish to include both the value *and* the aggregate in a single query.

Expression	Description
AVG(field) MAX(field) MIN(field) MEDIAN(field) SUM(field)	The average, maximum, minimum, or median of all values for that field, where everything else in a row is the same.

<code>COUNT([DISTINCT] field)</code>	The count of all values for that field, where everything else in a row is the same. Including <code>DISTINCT</code> will count only the distinct values that appear (duplicates will not be counted).
--------------------------------------	---

OTHER FUNCTIONS

LISTAGG

`LISTAGG` combines values from multiple result rows into one cell, where everything else in the row is the same. This is an aggregate function.

SYNTAX

```
LISTAGG(field, [, 'delimiter']) WITHIN GROUP (ORDER BY field)
```

PARAMETERS

`field` - the field for which values will be combined, when all other data in the row is the same.
`delimiter` - *(optional)* the delimiter used to separate values that are combined.

EXAMPLE

`LISTAGG(A.JOBTITLE, ', ') WITHIN GROUP (ORDER BY A.JOBTITLE)` → for someone who has multiple jobs, it will return things like: Professor, Director of Research Center, A. B. Smith Professor

NVL (null substitution)

`NVL` allows you to substitute a specific value when the field or expression you are looking for is null.

SYNTAX

```
NVL(expression, 'default')
```

PARAMETERS

`expression` - the field or expression; this will be returned if it exists.
`default` - the string that will be returned when `expression` is null.

EXAMPLE

```
NVL(A.NW_GL_AMT, '0.00')
```