

# **Comp 336/436 - Markup Languages**

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Fall Semester 2018 - Week 10

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# XML - XPath details - functions - mathematics

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- also include simple arithmetic operations with our expressions
- allow us to test for more complicated conditions
  - *or to output calculated values...*
- e.g to multiply, divide, add, or subtract,
  - *add first operand*
    - e.g. numerical constant 12 or a node set
  - *add mathematical operator*
    - \* (for multiplication)
    - div (for division, since / is reserved)
    - + (for addition)
    - − (for subtraction)
  - add second operand
- multiplication and division are performed before addition and subtraction
  - e.g.  $4+5*3 = 19$  and not 27
  - use parentheses to override the default, e.g.  $(4+5)*3 = 27$
- modulus operator may also be used
  - e.g.  $20 \bmod 4 = 0$  (since 4 divides evenly into 20)
  - but  $20 \bmod 3 = 2$  since 20/3 is 6 with a remainder of 2

# XML - working example - ancient sites - mathematics

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## XML

```
<history>
  <period>New Kingdom</period>
  <dynasty>18</dynasty>
  <year range="start" era="BC">1346</year>
  <year range="end" era="BC">1332</year>
</history>
```

## XSL

```
<xsl:choose>
  <xsl:when test="year[@range='end']">
    <xsl:value-of select="year[@range='start'] - year[@range='end']"/>
  </xsl:when>
  <xsl:otherwise>
    <xsl:value-of select="year[@range='start'] + 2017"/>
  </xsl:otherwise>
</xsl:choose>
```

- Demo - Ancient Sites 8

# XML - XPath & XSLT tests - functions - mathematics

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## **Exercise - part 9**

- update your XSL stylesheet
  - *add an option to calculate a given value from the data in your XML*
    - add new values to XML, if necessary, to perform calculations
  - *add output to rendered document*
- test stylesheet with XML file

~ 10 minutes

# XML - XPath details - functions - count nodes

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- `count ( )` function
  - *count total nodes in a given node set*
  - *e.g. count images in an image set...*
- use the `count ( )` function as follows,
  - *add `count (`*
  - *add the path to the node set count*
  - *add `)` to complete the function*

# XML - working example - ancient sites - count

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## XSL

```
<xsl:template match="images">
  <td><xsl:value-of select="count(./image)"/></td>
  <td>
    <a href=""><xsl:value-of select="image[@type='jpg'][position() = last()]" /></a>
  </td>
</xsl:template>
```

- Demo - Ancient Sites 9

# XML - XPath & XSLT tests - functions - count

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## ***Exercise - part 10***

- update your XSL stylesheet
  - *add an option to count nodes in a given node set*
    - add new values to XML, if necessary, to perform count
  - *add output to rendered document*
- test stylesheet with XML file

~ 10 minutes

## Demos

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- Ancient Sites - comparison - part 7
- Ancient Sites - mathematics - 8
- Ancient Sites - count - part 9



# References

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- [XPath Version 1.0 functions](#)
- [XPath Version 2 functions](#)