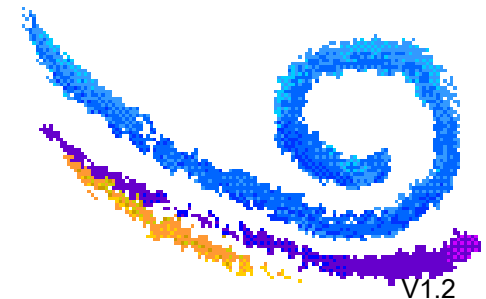


COBOL Changes

**Work with a subset of a DISPLAY or NATIONAL
data item**

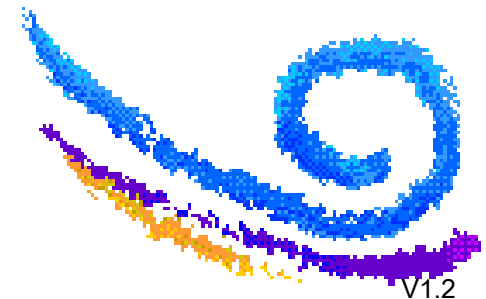
Grabbing a subset of a string: Reference Modification

- ▶ You can work with character string data and extract just a subset of a character field
 - This is called "substring" in most languages, but "reference modification" in COBOL (introduced in COBOL II)
 - The syntax is: *data_name*(*start*:[*length*])



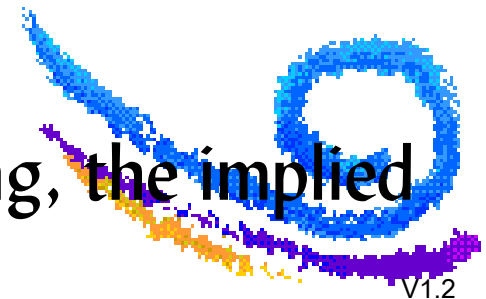
Reference Modification, 2

- ▶ The syntax is: *data_name*(*start*: [*length*])
 - That is, name the field and follow it with a specification of which character to start at and how many characters to extract
 - Note that if *data_name* is NATIONAL, each character is two bytes long



Reference Modification, 3

- ▶ The syntax is: *data_name*(*start*: [*length*])
 - *start* and *length* may each be any of: numeric literals, numeric data items, or numeric expressions
 - *start* must evaluate to an integer greater than 0 and less than the total length of *data_name*
 - *length* must evaluate to an integer such that adding its value to *start* does not put you past the end of *data_name*
 - The colon must be present; if *length* is missing, the implied length is "the rest of *data_name*"



Reference Modification, 4

► Some examples of using reference modification:

move fielda to fieldb (5:7) - move fielda to locations 5-11 of fieldb

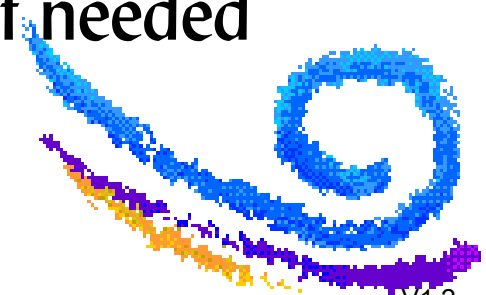
move fielda (N:3) to fieldb - move data from fielda starting at the position indicated by the field N for a length of 3 bytes to fieldb

move fielda (M + 2:) to fieldb (3: (xy - 3)/2)

- move data starting at position "M+2" to the end of fielda to the third character of fieldb for a length of (xy-3)/2

► Notes:

- Standard rules for character string moves apply -
 - Source is left justified in the target and padded on the right with spaces or truncated on the right, if needed
- If evaluating either *start* or *length* produces a non-integer, any fractional part is truncated



Reference Modification, 5

- ▶ Reference modification is generally allowed anywhere a DISPLAY or NATIONAL data item is allowed

```
display 'Last name is ' LName (1:len)
```

```
if answer (5:5) = 'COBOL' ...
```

```
evaluate policy-no (12:2)
```

```
  when 'HR' ...
```

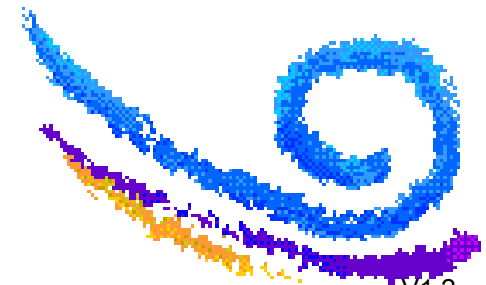
```
  when 'IS' ...
```

```
  .
```

```
  .
```

```
  .
```

```
end-evaluate
```





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