Marble
Enterprise Software

June 29, 2018

Number too large for size
(Overpopulated Data Items)

Overpopulated Data Items <u>as defined by IBM COBOL V5 Migration Recommendations</u> are restricted to MOVEs between overpopulated data items and redefined fields with other USAGES.

This document is broken into two parts:
1. **Definition**
2. **Suggestions for Identifying Errors**

Suggestions for correcting the problem are left to the user, once identification is made.

Definition

A good understanding of the internal data representation for USAGE DISPLAY, PACKED-DECIMAL, and BINARY or COMP usage and how these usages relate (or not) to each other is more than helpful in discovering where discrepancies exist in the existing code being converted to COBOL 5 or 6.

This document a recap of the problem as defined by IBM for converting to new compilers and then suggests a two step process to identify these errors.

Whether a user in moving to COBOL 5 or 6 or not, their current COBOL programs will be better off if they find and remove these errors in their existing code.

Understanding the problem:
```
05   WS-ELEMENTARY-FIELD      PIC X(02).
05   WS-COMP-3 REDEFINES WS-ELEMENTARY-FIELD
       USAGE PACKED-DECIMAL   PIC 9(02).
```
A packed-decimal field is allowed 3 numeric digits within two bytes or two characters in the packed decimal format of digit-digit-digit-sign or '567F' where the letter F, C, or D is the sign and 5, 6 and 7 are the digits.

As the field WS-COMP-3 is a REDEFINES of another field, an original value <u>or</u> a MOVE to the other field, can put a VALUE in WS-COMP-3 of more than two digits, such as the '567F' shown in the previous paragraph.

The previous example showed a packed decimal field. The following example shows the same type of problem created with a binary field:

```
05   WS-SECOND-ELEM-FIELD      PIC X(02).
05   WS-BINARY-FIELD REDEFINES WS-ELEMENTARY-FIELD
       USAGE BINARY           PIC 9(03).
```

Here again, the field WS-BINARY-FIELD is a REDEFINES of another field and this allows a MOVE or original VALUE to affect WS-BINARY-FIELD establishing a VALUE greater than 999.

Suggestions for Identifying Errors

Step 1 is to identify all PACKED or BINARY fields in the program and eliminate those from consideration that either are not REDEFINED and also not affected by group moves that could have literals moved to the group field that would affect selected fields.

For users of Control/DCD, consider option 5 from its main menu to do 'Abend Analysis' which allows a SELECT language and use control statement:

SELECT IF USAGE = C3 OR C

This selection will pull off a report of all Packed and Binary items in the program and the user will be assured that none are missed. Once done, look for appropriate REDEFINES to look at more closely, <u>unless</u> using Control/DCD software, in which case, looking for REDEFINES may be bypassed by using the 'Digital Documentation Manual' for this program as covered in **Step 2** next.

Step 2 is to look for MOVEs to the REDEFINED fields to these PACKED or BINARY fields.

The previous step identifies these usually elementary fields. Using the cross-reference map or other method, for each field look at all references found and see if there are PROCEDURE DIVISION statement that cause a problem.

For users of Control/DCD, it is recommended that the user create a Digital Documentation Manual in PDF format with option INDIRECT REFERENCES set to a **'Y'**, under 'Modify Type Analysis provided' and then simply look at each identified field in the SELECT USAGE step above and then use the INDIRECT REFERENCES line as shown in example below to see where MOVEs are that need to be verified.

```
(0467) WS-COMP-3
     in WORKING-STORAGE
     05  WS-COMP-3   PIC 9(02) USAGE COMP-3
      Indirectly Changed @1792
```

The @1792 identifies a MOVE to a REDEFINED field at line 1792. To check for an error here, go to COBOL Procedure Division line 1792 in the DDM and look at the MOVE or other statement found there. See example below:

```
MOVE '567C'  TO  WS-ELEMENTARY-FIELD.
```

This statement shows how a 3-digit signed positive field is moved into a two-digit defined PACKED DECIMAL field. This identifies an error that needs to be corrected.

Want to know more? Contact us today. Call 1-800-252-1400 ext. #4 or send an email to sales@marblecomputer.com