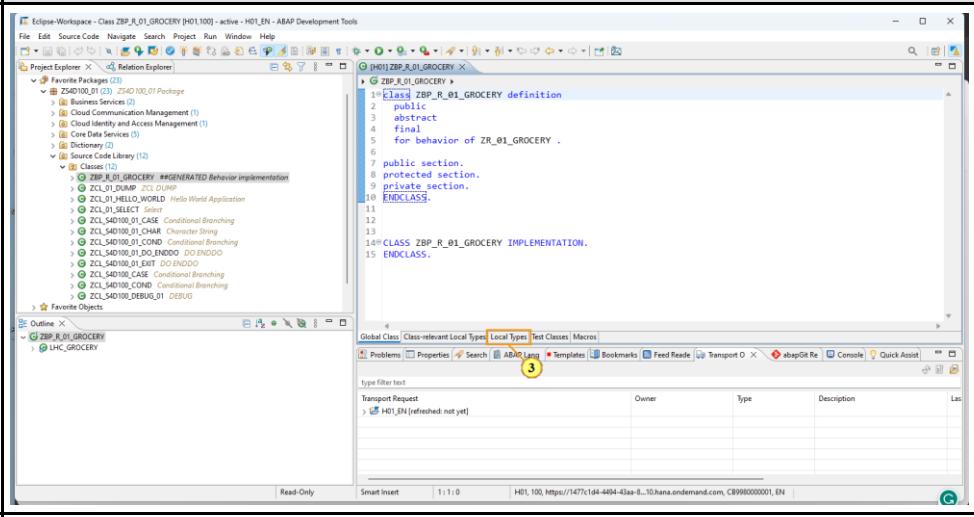
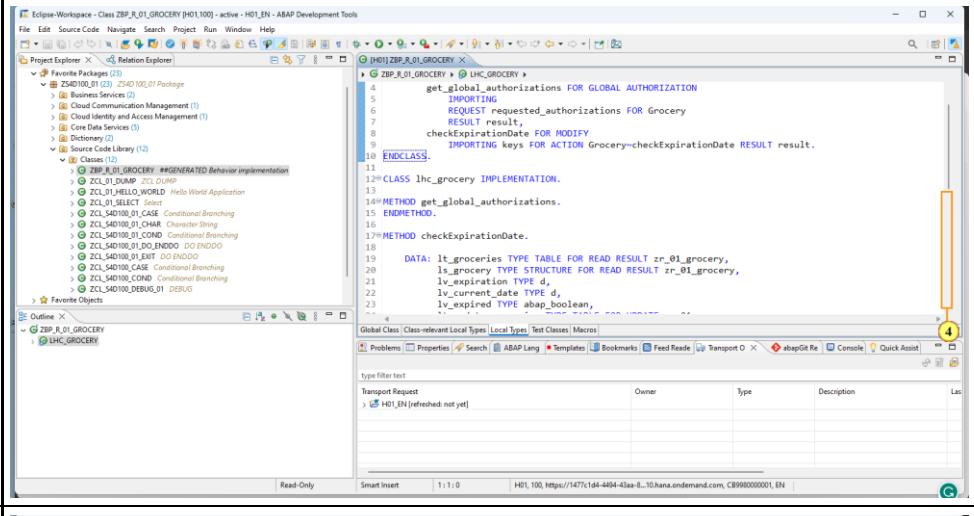
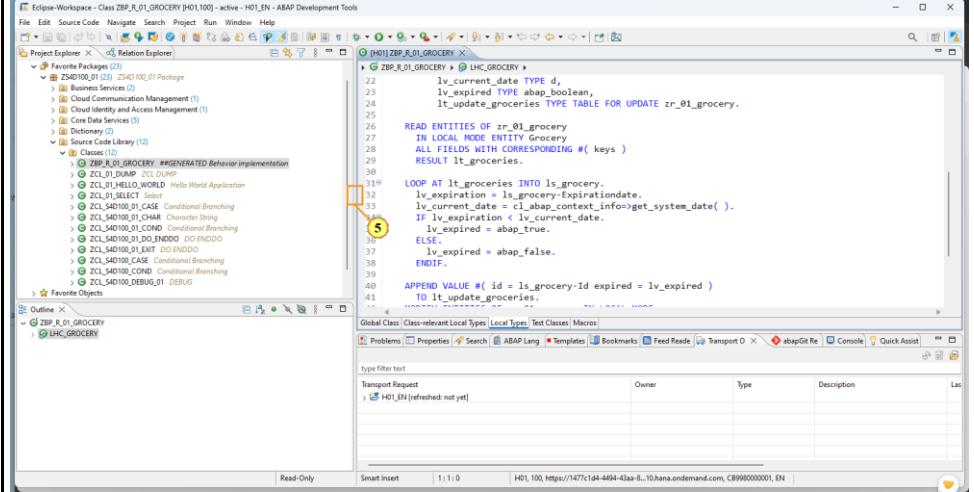
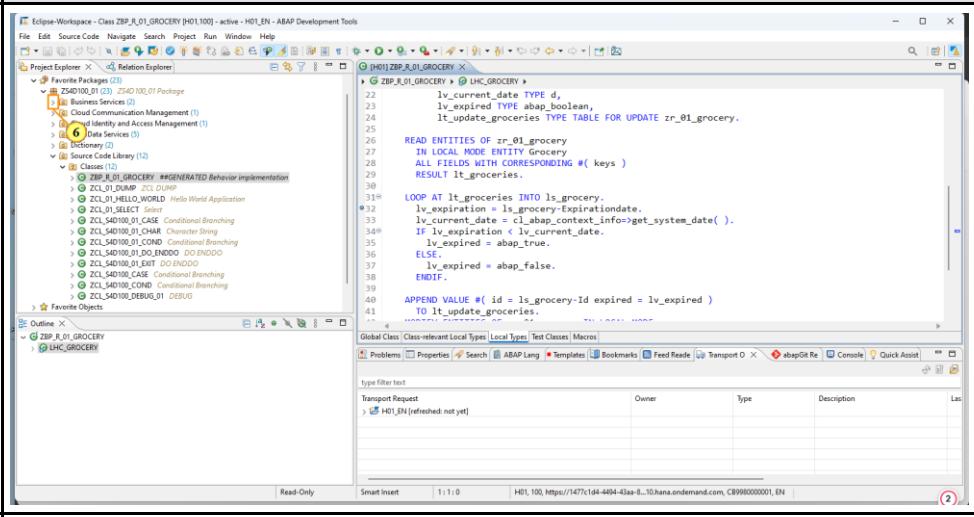
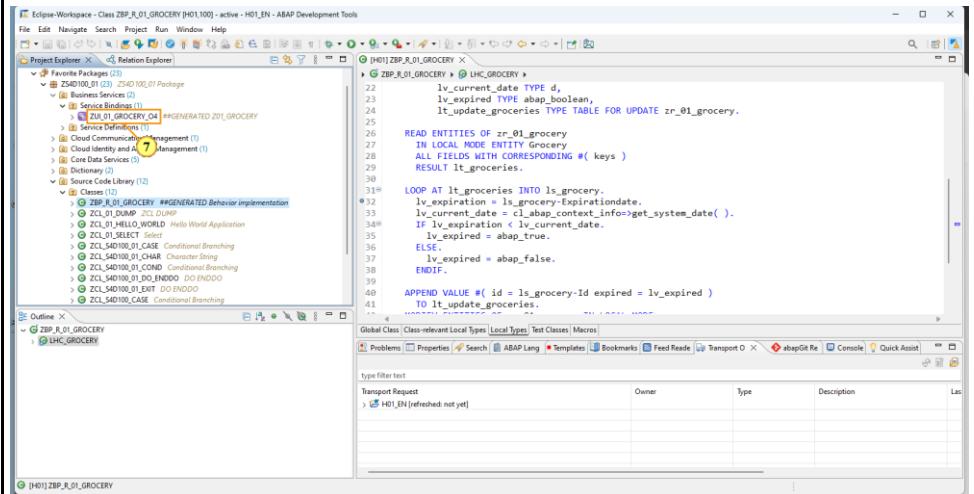
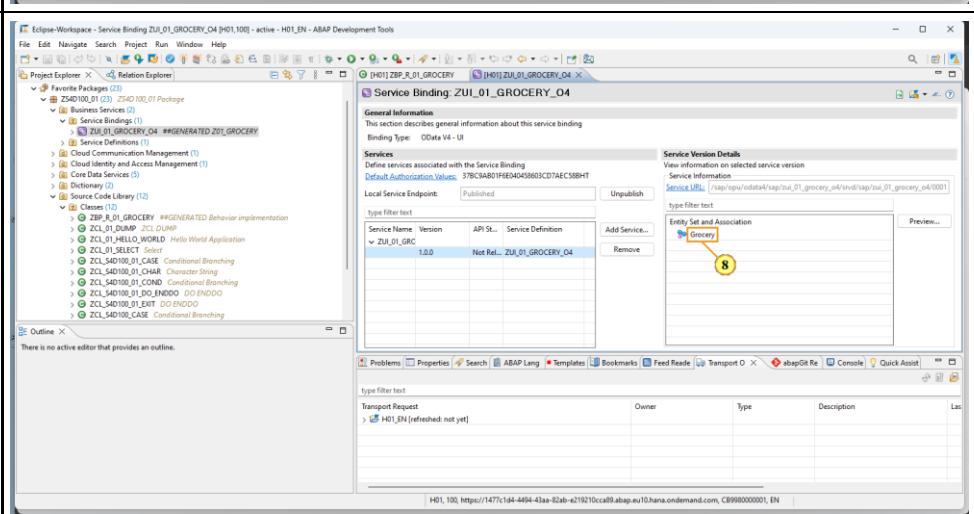
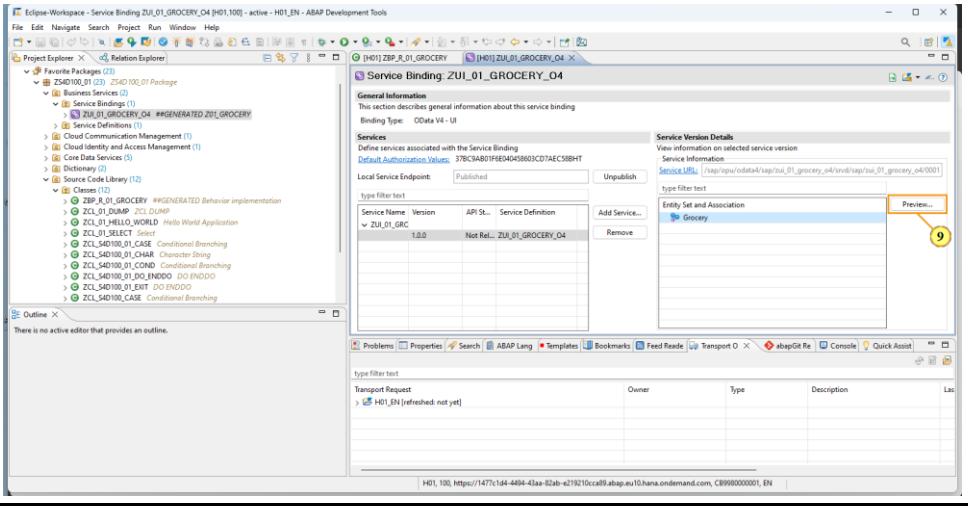
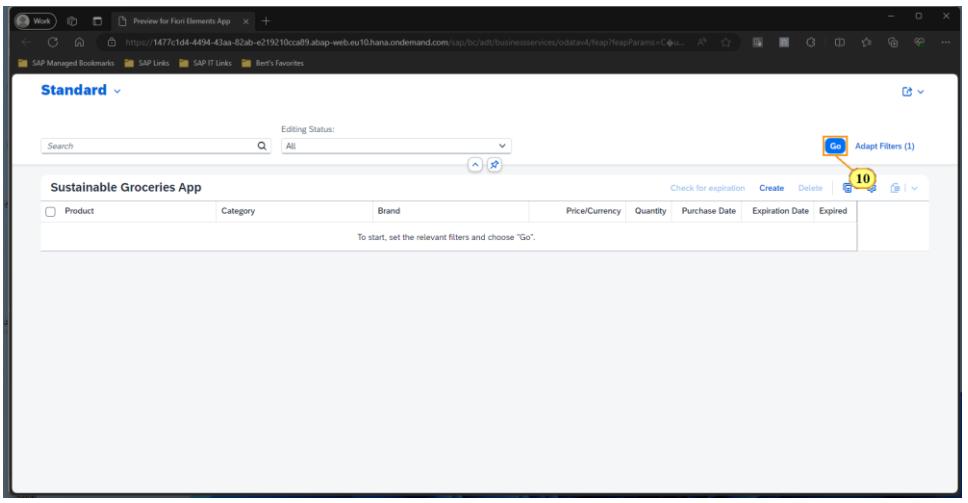
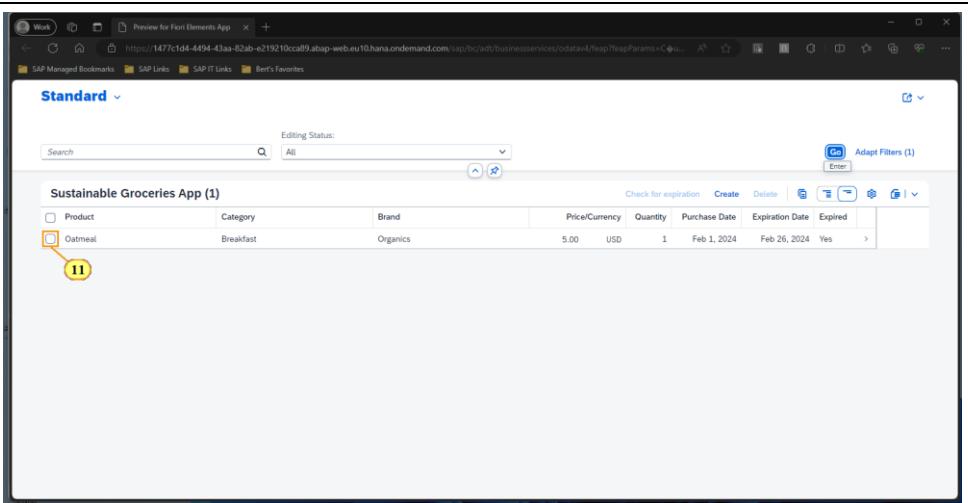


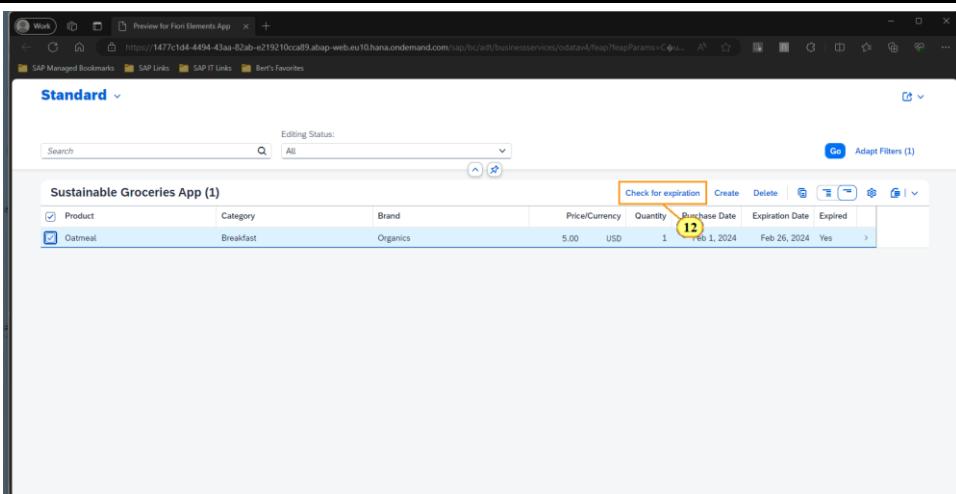
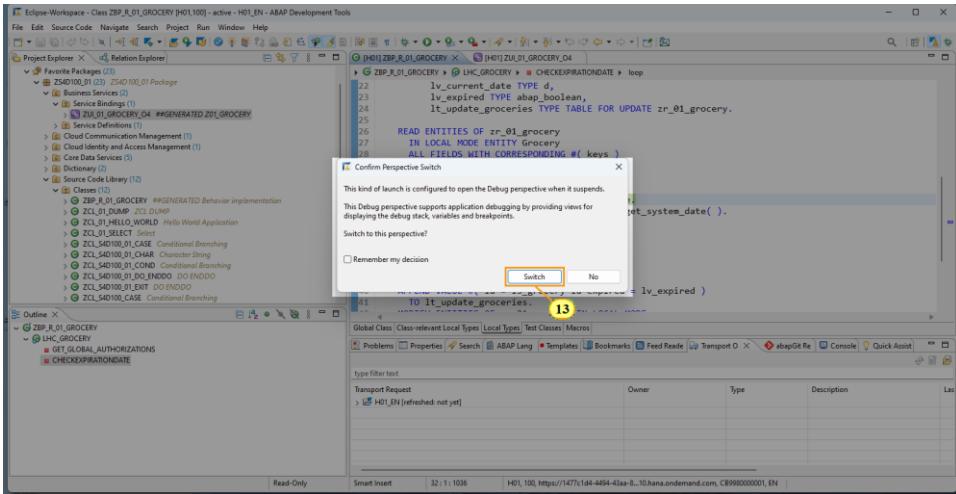
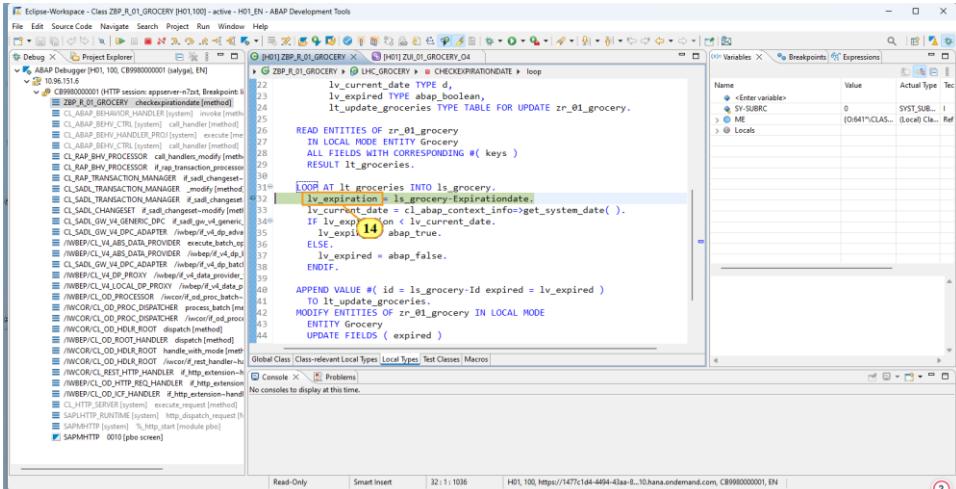
## Debug an ABAP Application and Set a Watchpoint

Explanation	Screenshot
<p>To learn more about how to debug an ABAP application and set a watchpoint, follow this interactive tutorial.</p>	
<p>1. Choose <b>ZS4D100_01 &gt; Source Code Library</b>.</p>	
<p>2. Choose <b>ZBP_R_01_GROCERY with the double-click.</b></p>	

Explanation	Screenshot
<p>3. Choose Local Types.</p>	 <pre data-bbox="466 278 1440 795"> class ZBP_R_01_GROCERY definition   public     abstract   final     for behavior of ZR_01_GROCERY .   protected section.   private section.   endclass.  CLASS ZBP_R_01_GROCERY IMPLEMENTATION. ENDCLASS. </pre>
<p>4. To display additional information, select the scroll bar to scroll down.</p>	 <pre data-bbox="466 795 1440 1311"> METHOD get_global_authorizations FOR GLOBAL AUTHORIZATION.   IMPORTING     REQUEST requested_authorizations FOR Grocery   RESULT result,     checkExpirationDate FOR MODIFY     IMPORTING keys FOR ACTION Grocery-&gt;checkExpirationDate RESULT result.   ENDMETHOD.  METHOD checkExpirationDate.   DATA: lt_groceries TYPE TABLE FOR READ RESULT zr_01_grocery,         ls_grocery TYPE STRUCTURE FOR READ RESULT zr_01_grocery,         lv_expiration TYPE d,         lv_current_date TYPE d,         lv_expired TYPE abap_boolean,         lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery.   READ ENTITIES OF zr_01_grocery   IN LOGICAL ENTITY Grocery   ALL FIELDS WITH CORRESPONDING #( keys )   RESULT lt_groceries. </pre>
<p>5. Choose the area with the double-click.</p>	 <pre data-bbox="466 1311 1440 1803"> LOOP AT lt_groceries INTO ls_grocery.   lv_expiration = ls_grocery-expirationdate.   lv_current_date = cl_abap_context_info&gt;get_system_date( ).   IF lv_expiration &lt; lv_current_date.     lv_expired = abap_true.   ELSE.     lv_expired = abap_false.   ENDIF.   APPEND VALUE #( id = ls_grocery-&gt;Id expired = lv_expired )     TO lt_update_groceries. </pre>

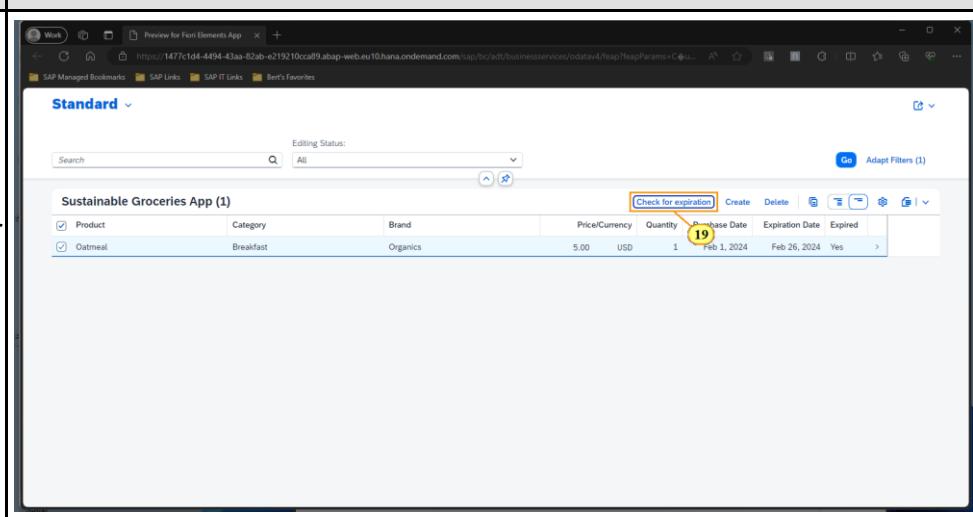
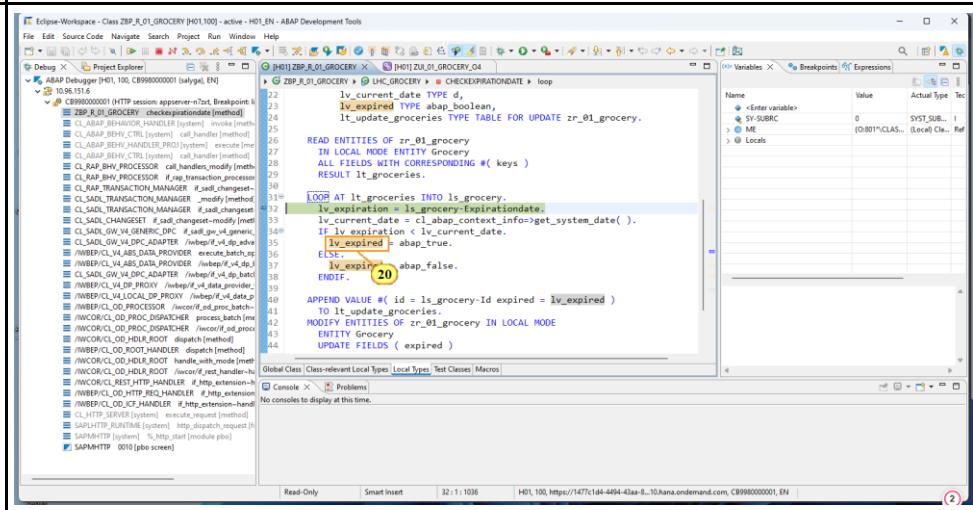
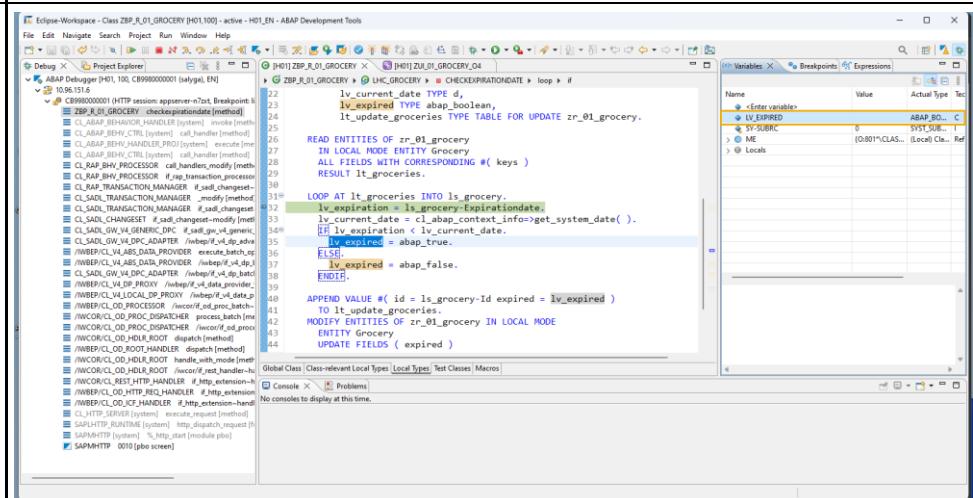
Explanation	Screenshot
<p>6. To expand the Business Services items pane, choose the arrow.</p>	 <pre> Eclipse-Workspace - Class ZBP_R_01_GROCERY [H01,100] - active - H01_EN - ABAP Development Tools File Edit Source Code Navigate Search Project Run Window Help Project Explorer Relation Explorer [...] Z54D100_01 (3) Z54D100_01 Package     Business Services         ZBP_R_01_GROCERY #GENERATED_Z01_GROCERY (1)         ZCL_01_HELLO_WORLD Hello World Application         ZCL_01_SELECT Select         ZCL_S4D100_01_CASE Conditional Branching         ZCL_S4D100_01_CHAR Character String         ZCL_S4D100_01_COND Conditional Branching         ZCL_S4D100_01_DO_INDOO DO INDOO         ZCL_S4D100_01_EXIT DO INDOO         ZCL_S4D100_01_CASE Conditional Branching         ZCL_S4D100_01_DEBUG DEBUG     ...     Classes (12)         ZBP_R_01_GROCERY #GENERATED Behavior implementation         ZCL_01_DUMP ZCL_DUMP         ZCL_01_HELLO_WORLD Hello World Application         ZCL_01_SELECT Select         ZCL_S4D100_01_CASE Conditional Branching         ZCL_S4D100_01_CHAR Character String         ZCL_S4D100_01_COND Conditional Branching         ZCL_S4D100_01_DO_INDOO DO INDOO         ZCL_S4D100_01_EXIT DO INDOO         ZCL_S4D100_01_CASE Conditional Branching     ...     ...     Outline ZBP_R_01_GROCERY LHC_GROCERY     Problems Properties Search ABAP Lang Templates Bookmarks Feed Reader Transport O abapGit Re Console Quick Assist     type filter test     Transport Request Owner Type Description Last     &gt; H01_EN [refreshed: not yet] Smart Insert 1:1:0 H01,100, https://1477c1d4-4494-43aa-8...10.hana.ondemand.com, CB9980000001, EN </pre>
<p>7. Choose ZUI_01_GROCERY_04 with the double-click.</p>	 <pre> Eclipse-Workspace - Class ZBP_R_01_GROCERY [H01,100] - active - H01_EN - ABAP Development Tools File Edit Navigate Search Project Run Window Help Project Explorer Relation Explorer [...] Z54D100_01 (3) Z54D100_01 Package     Business Services         ZBP_R_01_GROCERY #GENERATED_Z01_GROCERY (1)         ZCL_01_HELLO_WORLD Hello World Application         ZCL_01_SELECT Select         ZCL_S4D100_01_CASE Conditional Branching         ZCL_S4D100_01_CHAR Character String         ZCL_S4D100_01_COND Conditional Branching         ZCL_S4D100_01_DO_INDOO DO INDOO         ZCL_S4D100_01_EXIT DO INDOO         ZCL_S4D100_01_CASE Conditional Branching     ...     Classes (12)         ZBP_R_01_GROCERY #GENERATED Behavior implementation         ZCL_01_DUMP ZCL_DUMP         ZCL_01_HELLO_WORLD Hello World Application         ZCL_01_SELECT Select         ZCL_S4D100_01_CASE Conditional Branching         ZCL_S4D100_01_CHAR Character String         ZCL_S4D100_01_COND Conditional Branching         ZCL_S4D100_01_DO_INDOO DO INDOO         ZCL_S4D100_01_EXIT DO INDOO         ZCL_S4D100_01_CASE Conditional Branching     ...     ...     Outline ZBP_R_01_GROCERY LHC_GROCERY     Problems Properties Search ABAP Lang Templates Bookmarks Feed Reader Transport O abapGit Re Console Quick Assist     type filter test     Transport Request Owner Type Description Last     &gt; H01_EN [refreshed: not yet] Smart Insert 1:1:0 H01,100, https://1477c1d4-4494-43aa-8...10.hana.ondemand.com, CB9980000001, EN </pre>
<p>8. Choose Grocery.</p>	 <pre> Eclipse-Workspace - Service Binding ZUI_01_GROCERY_04 [H01,100] - active - H01_EN - ABAP Development Tools File Edit Navigate Search Project Run Window Help Project Explorer Relation Explorer [...] Z54D100_01 (3) Z54D100_01 Package     Service Bindings (1)         ZUI_01_GROCERY_04 #GENERATED_Z01_GROCERY (1)         ZCL_01_HELLO_WORLD Hello World Application         ZCL_01_SELECT Select         ZCL_S4D100_01_CASE Conditional Branching         ZCL_S4D100_01_CHAR Character String         ZCL_S4D100_01_COND Conditional Branching         ZCL_S4D100_01_DO_INDOO DO INDOO         ZCL_S4D100_01_EXIT DO INDOO         ZCL_S4D100_01_CASE Conditional Branching     ...     Classes (12)         ZBP_R_01_GROCERY #GENERATED Behavior implementation         ZCL_01_DUMP ZCL_DUMP         ZCL_01_HELLO_WORLD Hello World Application         ZCL_01_SELECT Select         ZCL_S4D100_01_CASE Conditional Branching         ZCL_S4D100_01_CHAR Character String         ZCL_S4D100_01_COND Conditional Branching         ZCL_S4D100_01_DO_INDOO DO INDOO         ZCL_S4D100_01_EXIT DO INDOO         ZCL_S4D100_01_CASE Conditional Branching     ...     ...     Outline ZBP_R_01_GROCERY LHC_GROCERY     Problems Properties Search ABAP Lang Templates Bookmarks Feed Reader Transport O abapGit Re Console Quick Assist     type filter test     Transport Request Owner Type Description Last     &gt; H01_EN [refreshed: not yet] Smart Insert 1:1:0 H01,100, https://1477c1d4-4494-43aa-8...10.hana.ondemand.com, CB9980000001, EN </pre> <p>Service Binding: ZUI_01_GROCERY_04</p> <p>General Information</p> <p>This section describes general information about this service binding.</p> <p>Binding Type: OData V4 - UI</p> <p>Services</p> <p>Define services associated with the Service Binding</p> <p>Default Authorization Value: 37BCB0B1FEE04D05803C3D1AE588HT</p> <p>Local Service Endpoint: Unpublish</p> <p>Service Version Details</p> <p>View information on selected service version</p> <p>Service Information</p> <p>Service URL: /sap/opu/odata/SAP/ZUI_01_grocery_04/svc/sap/zui_01_grocery_04/0001</p> <p>Entity Set and Association</p> <p>Grocery</p> <p>8</p>

Explanation	Screenshot
<p>9. Choose <i>Preview</i>.</p>	
<p>10. Choose Go.</p>	
<p>11. Select Oatmeal.</p>	

Explanation	Screenshot
<p><b>12. Choose Check for expiration.</b></p>	
<p><b>13. Choose Switch.</b></p>	
<p><b>14. Choose lv_expiration with the double-click.</b></p>	

Explanation	Screenshot
<p>You can now see the lv_expiration in variable list on top right.</p>	<pre> 22 lv_current_date TYPE d, 23 lv_expired TYPE abap_boolean, 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 IN LOCAL MODE ENTITY Grocery 28 ALL FIELDS WITH CORRESPONDING #( keys ) 29 RESULT lt_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate. 33   lv_current_date = cl_abap_context_info&gt;get_system_date( ). 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41 TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43 ENTITY Grocery 44 UPDATE FIELDS ( expired ) </pre>
<p>15. Choose Step Over.</p>	<pre> 22 lv_current_date TYPE d, 23 lv_expired TYPE abap_boolean, 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 IN LOCAL MODE ENTITY Grocery 28 ALL FIELDS WITH CORRESPONDING #( keys ) 29 RESULT lt_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate. 33   lv_current_date = cl_abap_context_info&gt;get_system_date( ). 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41 TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43 ENTITY Grocery 44 UPDATE FIELDS ( expired ) </pre>
<p>You can now see that the value of lv_expiration has changed.</p>	<pre> 22 lv_current_date TYPE d, 23 lv_expired TYPE abap_boolean, 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 IN LOCAL MODE ENTITY Grocery 28 ALL FIELDS WITH CORRESPONDING #( keys ) 29 RESULT lt_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate. 33   lv_current_date = cl_abap_context_info&gt;get_system_date( ). 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41 TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43 ENTITY Grocery 44 UPDATE FIELDS ( expired ) </pre>

Explanation	Screenshot
16. Choose Step Over.	<pre> 22 lv_current_date TYPE d, 23 lv_expired TYPE abap_boolean, 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 IN LOCAL MODE ENTITY Grocery 28 ALL FIELDS WITH CORRESPONDING #( keys ) 29 30 RESULT lt_groceries. 31 32 LOOP AT lt_groceries INTO ls_grocery. 33   lv_expiration = ls_grocery-Expirationdate. 34   lv_current_date = cl_abap_context_info&gt;get_system_date( ). 35   IF lv_expiration &lt; lv_current_date. 36     lv_expired = abap_true. 37   ELSE. 38     lv_expired = abap_false. 39   ENDIF. 40 41 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 42 TO lt_update_groceries. 43 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 44 ENTITY Grocery 45 UPDATE FIELDS ( expired ) </pre>
17. Choose Step Over.	<pre> 22 lv_current_date TYPE d, 23 lv_expired TYPE abap_boolean, 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 IN LOCAL MODE ENTITY Grocery 28 ALL FIELDS WITH CORRESPONDING #( keys ) 29 30 RESULT lt_groceries. 31 32 LOOP AT lt_groceries INTO ls_grocery. 33   lv_expiration = ls_grocery-Expirationdate. 34   lv_current_date = cl_abap_context_info&gt;get_system_date( ). 35   IF lv_expiration &lt; lv_current_date. 36     lv_expired = abap_true. 37   ELSE. 38     lv_expired = abap_false. 39   ENDIF. 40 41 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 42 TO lt_update_groceries. 43 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 44 ENTITY Grocery 45 UPDATE FIELDS ( expired ) </pre>
18. Choose Run.	<pre> 22 lv_current_date TYPE d, 23 lv_expired TYPE abap_boolean, 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 IN LOCAL MODE ENTITY Grocery 28 ALL FIELDS WITH CORRESPONDING #( keys ) 29 30 RESULT lt_groceries. 31 32 LOOP AT lt_groceries INTO ls_grocery. 33   lv_expiration = ls_grocery-Expirationdate. 34   lv_current_date = cl_abap_context_info&gt;get_system_date( ). 35   IF lv_expiration &lt; lv_current_date. 36     lv_expired = abap_true. 37   ELSE. 38     lv_expired = abap_false. 39   ENDIF. 40 41 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 42 TO lt_update_groceries. 43 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 44 ENTITY Grocery 45 UPDATE FIELDS ( expired ) </pre>

Explanation	Screenshot
<p>19. Choose <i>Check for expiration</i>.</p>	
<p>20. Choose <i>lv_expired</i> with the double-click.</p>	
<p>You can now see <i>lv_expired</i> in variable list on the top right.</p>	

## Explanation

## Screenshot

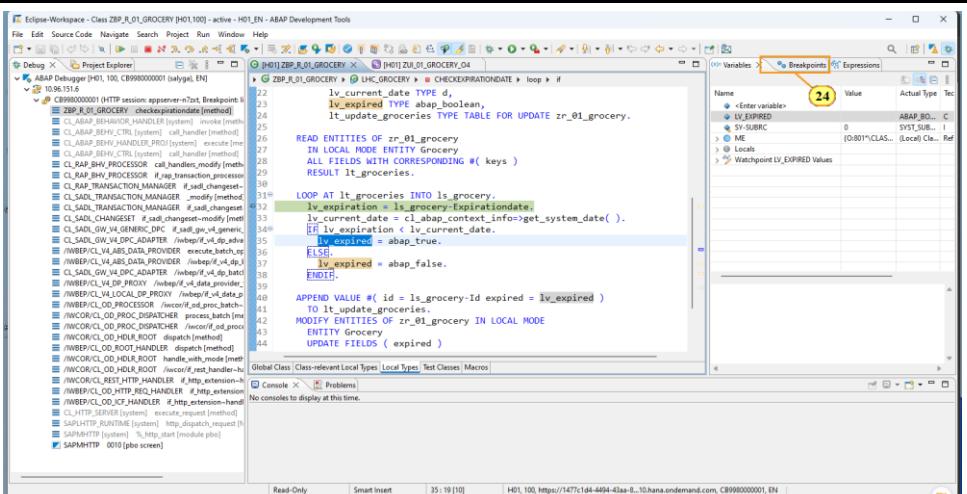
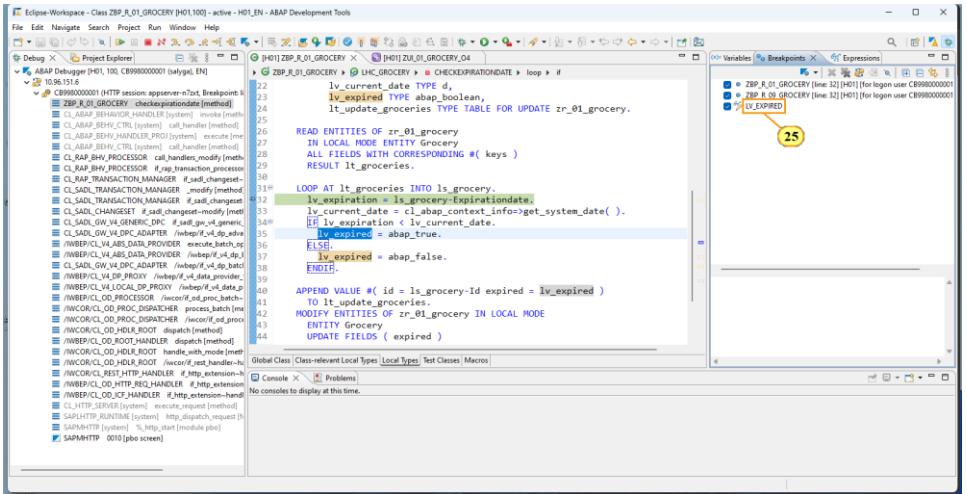
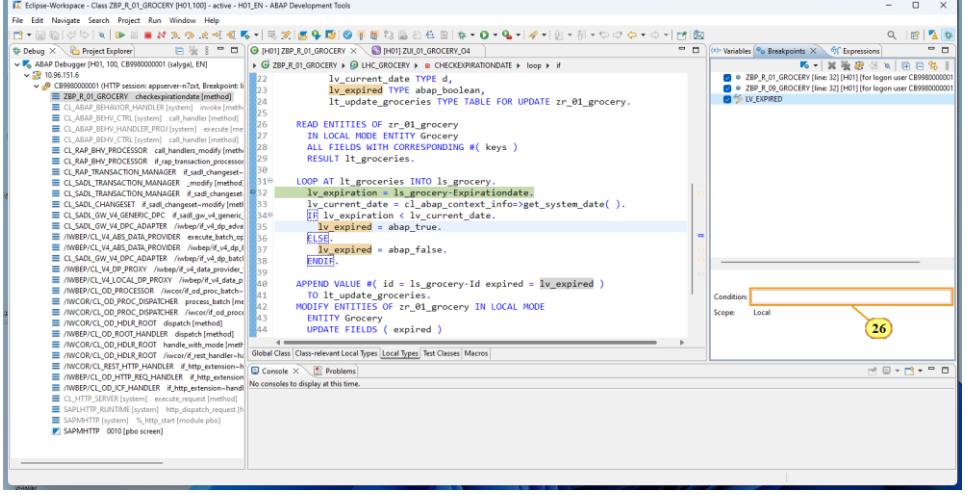
21. Choose the area with the right-click.

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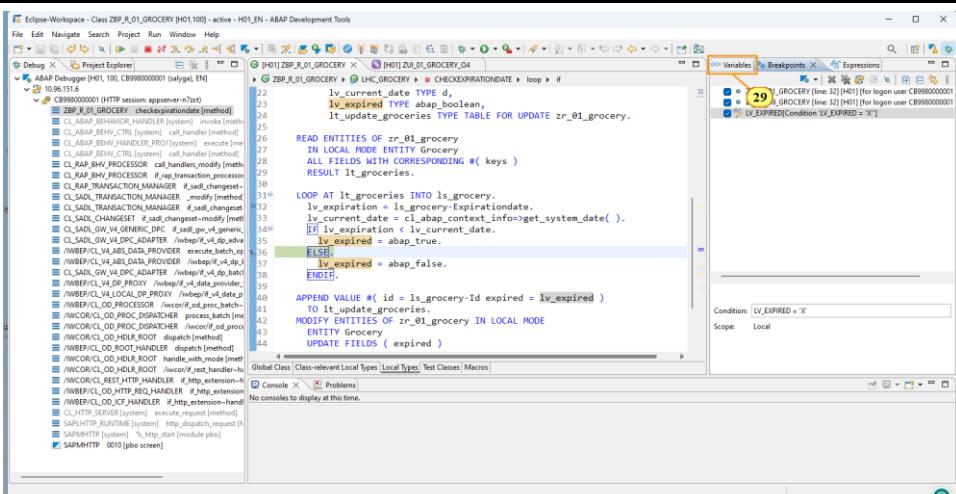
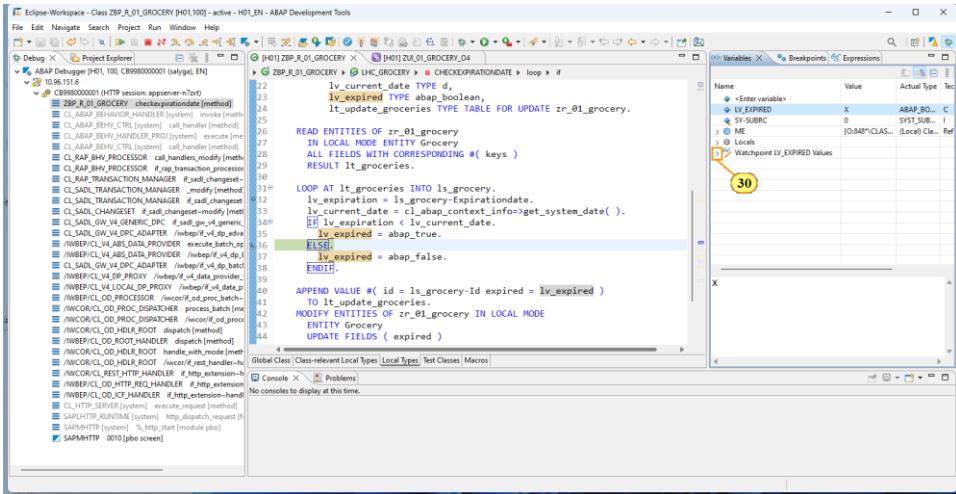
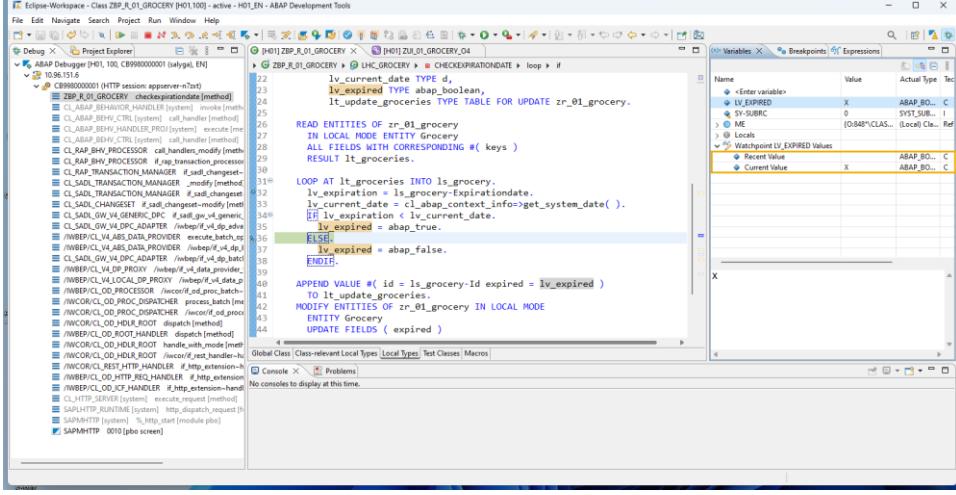
    lv_expired = ls_grocery-Expirydate
    |-----|
    |-----| Set Watchpoint
    |-----|
    |-----| Append Value
    |-----| To lt_update_groceries
    |-----| Modify Entities of zr_01_grocery IN LOCAL MODE
    |-----| ENTITY Grocery
    |-----| UPDATE FIELDS ( expired )
  
```

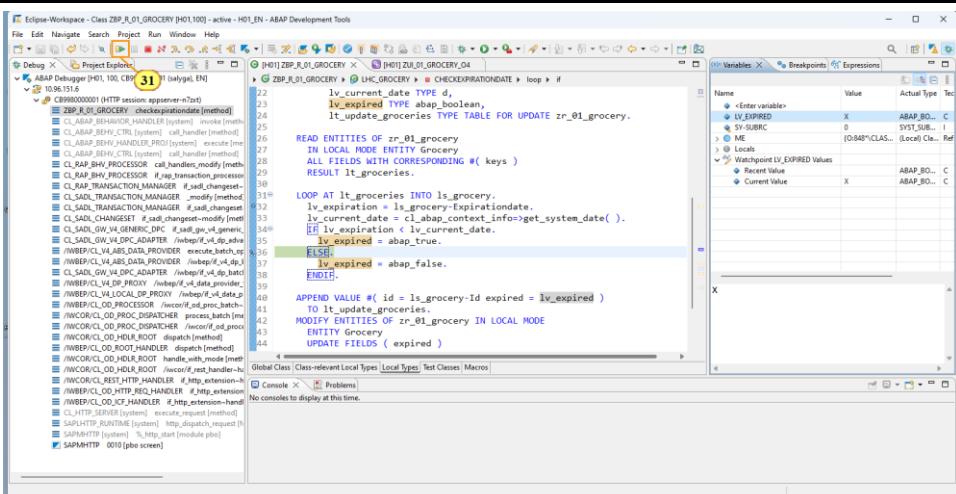
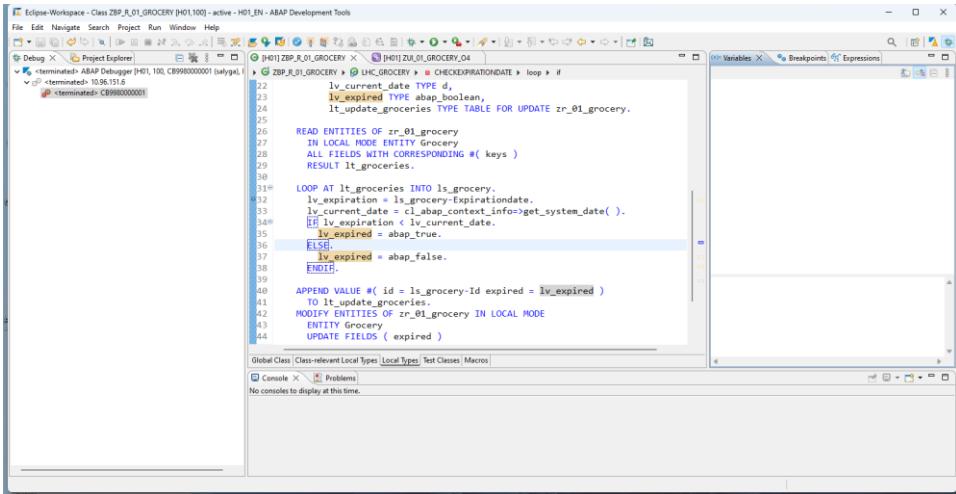
22. Choose Set Watchpoint.

23. Choose OK.

Explanation	Screenshot
24. Choose Breakpoints.	 <pre> 22 lv_current_date TYPE d; 23 lv_expired TYPE abap_boolean; 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 ALL FIELDS WITH CORRESPONDING #( keys ) 28 29 RESULT 1t_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate; 33   lv_current_date = cl_abap_context_info-&gt;get_system_date( ); 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41 TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43 ENTITY Grocery 44 UPDATE FIELDS ( expired ) </pre>
25. Choose LV_EXPIRED.	 <pre> 22 lv_current_date TYPE d; 23 lv_expired TYPE abap_boolean; 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 ALL FIELDS WITH CORRESPONDING #( keys ) 28 29 RESULT 1t_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate; 33   lv_current_date = cl_abap_context_info-&gt;get_system_date( ); 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41 TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43 ENTITY Grocery 44 UPDATE FIELDS ( expired ) </pre>
26. In the Condition field, enter = 'X'.	 <pre> 22 lv_current_date TYPE d; 23 lv_expired TYPE abap_boolean; 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27 ALL FIELDS WITH CORRESPONDING #( keys ) 28 29 RESULT 1t_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate; 33   lv_current_date = cl_abap_context_info-&gt;get_system_date( ); 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41 TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43 ENTITY Grocery 44 UPDATE FIELDS ( expired ) </pre>

Explanation	Screenshot
27. Choose Save.	<p>The screenshot shows the Eclipse IDE interface with the ABAP Development Tools. A breakpoint is set at line 27 of the ZBP_R_01_GROCERY class. The Variables view displays a local variable <code>lv_expired</code> with the value <code>'X'</code>. The code snippet shows a loop that reads entities from <code>lt_groceries</code> and updates them based on their expiration date.</p> <pre> 22 lv_current_date TYPE d; 23 lv_expired TYPE abap_boolean; 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27   IN LOCAL MODE ENTITY Grocery 28   ALL FIELDS WITH CORRESPONDING #( keys ) 29   RESULT 1t_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate; 33   lv_current_date = cl_abap_context_info-get_system_date( ). 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41   TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43   ENTITY Grocery 44   UPDATE FIELDS ( expired ) </pre>
28. Choose Run.	<p>The screenshot shows the Eclipse IDE interface with the ABAP Development Tools. The breakpoint at line 27 has been removed. The Variables view displays a local variable <code>lv_expired</code> with the value <code>''</code>. The code snippet remains the same as in the previous screenshot.</p> <pre> 22 lv_current_date TYPE d; 23 lv_expired TYPE abap_boolean; 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27   IN LOCAL MODE ENTITY Grocery 28   ALL FIELDS WITH CORRESPONDING #( keys ) 29   RESULT 1t_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate; 33   lv_current_date = cl_abap_context_info-get_system_date( ). 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41   TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43   ENTITY Grocery 44   UPDATE FIELDS ( expired ) </pre>
The debugger is stopped as lv_expired value has changed.	<p>The screenshot shows the Eclipse IDE interface with the ABAP Development Tools. The breakpoint at line 27 has been re-enabled. The Variables view displays a local variable <code>lv_expired</code> with the value <code>'X'</code>. The code snippet remains the same as in the previous screenshots.</p> <pre> 22 lv_current_date TYPE d; 23 lv_expired TYPE abap_boolean; 24 lt_update_groceries TYPE TABLE FOR UPDATE zr_01_grocery. 25 26 READ ENTITIES OF zr_01_grocery 27   IN LOCAL MODE ENTITY Grocery 28   ALL FIELDS WITH CORRESPONDING #( keys ) 29   RESULT 1t_groceries. 30 31 LOOP AT lt_groceries INTO ls_grocery. 32   lv_expiration = ls_grocery-Expirationdate; 33   lv_current_date = cl_abap_context_info-get_system_date( ). 34   IF lv_expiration &lt; lv_current_date. 35     lv_expired = abap_true. 36   ELSE. 37     lv_expired = abap_false. 38   ENDIF. 39 40 APPEND VALUE #( id = ls_grocery-Id expired = lv_expired ) 41   TO lt_update_groceries. 42 MODIFY ENTITIES OF zr_01_grocery IN LOCAL MODE 43   ENTITY Grocery 44   UPDATE FIELDS ( expired ) </pre>

Explanation	Screenshot
29. Choose Variables.	
30. To expand the Watchpoint LV_EXPIRED Values items pane, choose the arrow.	
Notice the Recent value vs the Current value.	

Explanation	Screenshot
31. Choose Run.	
The debug session is terminated.	
You have successfully debugged an ABAP application and set a watchpoint.  This concludes the interactive tutorial.	