HR Analytics - SmartApps

ARBUTUS
Powerful Analytics Simplified

SMARTAPP Description	PARAMETERS/USER INPUTS/SELECTIONS *Italics indicate required files.*	REQUIRED FIELDS	OUTPUT
HR01 - Payroll Data Validity To ensure payroll validity by identifying employee transactions where critical data elements deviate from expected values and formats. Identify payroll transactions where critical employee master data is either missing from or incorrectly formatted in payroll system, e.g., ADP	*Payroll file* 1. User is required to select a table for analysis from a dropdown list. 2. Next, user selects the character fields, numeric fields, or date/datetime fields required for this analysis from a dropdown populated with fields from the previously chosen table. The intention of selecting these fields is to test them for data validity errors. Note: Essentially, any other file can be used in this analytic. Ideally, the file must contain at least a character field, numeric field, or a date/date time field.	• No specifically named fields are required - user has the ability to test any character, numeric, or date/datetime fields found in the table chosen for testing.	**Table(s)** Up to three tables, one each for character data fields, numeric data fields, and date/datetime data fields, reporting on the data validity errors of those fields where appropriate, e.g., blanks, inconsistent formats, oldest date, etc.
HR02 - Employee Duplicates Bank and National ID To ensure employee records are only created once. Identify payroll transactions where employee bank account, employee number or national ID number are the same.	*Payroll / Employee Master* 1. User is required to select a table for analysis from a dropdown list. 2. Next, user selects any of the following duplicates test required for this analysis: » Bank accounts only » National IDs only » Bank accounts and National IDs 3. In addition, and based on the selection of the three duplicates test listed above, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Bank account number » Bank ID number » National ID number Note: Any other similar file containing the fields listed in the **REQUIRED FIELDS** column on the right may also be used in this analytic.	• Employee ID - character or numeric data type acceptable • Employee bank account number - character data type only acceptable • Employee bank identifier - character data type only acceptable • Employee national ID number - character data type only acceptable	**Table(s)** • One table for results from duplicates testing based on bank accounts only. • One table for results from duplicates testing based on national IDs only. • Up to two tables for results from duplicates testing based on bank accounts and national IDs. The results will show instances of duplicate records based on the selection of the duplicates test. For example, if the selection made was to test for duplicate bank accounts only, then the results will include all records from the selected file containing duplicate bank account numbers. Note: The test for duplicates is case-sensitive.
HR03 - Employee Duplicate Addresses To ensure employee records are only created once. Identify employees who share the same address.	*Employee Master* 1. User is required to select a table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Employee address » Postal / Zip code » City » State / Province Note: Any other similar file containing the fields listed in the **REQUIRED FIELDS** column on the right may also be selected at run time.	• Employee ID - character or numeric data type acceptable • Employee address - character data type only acceptable • Employee postal/zip code - character data type only acceptable • Employee city - character data type only acceptable • Employee state / province - character data type only acceptable"	**Table** The output table shows instances of duplicate employee addresses. The duplicates testing is based on the normalization of the original address field. For example, a record with an address such as **4539 Lake St.** and another record with an address such as **4539 Lake Street** will be reported as duplicates, as **4539 Lake St.**, once normalized, will be analyzed as **4539 Lake Street** and hence considered as a duplicate. Note: Case sensitivity does not apply in this duplicate employee addresses test because the analysis is performed on the normalized version of the original address field.

HR Analytics - SmartApps, continued

ARBUTUS
Powerful Analytics Simplified

SMARTAPP Description	PARAMETERS/USER INPUTS/SELECTIONS *Italics indicate required files.*	REQUIRED FIELDS	OUTPUT
HR04 - Employee Vendor Address Match To ensure employees are not also listed as vendors. Using in-house data, cross reference employees with vendors. Find employees who are also in the vendor data base by comparing key criteria such as addresses.	*Employee Master* *Vendor Master* 1. To begin with, user is required to select the Vendor Master table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Vendor ID number » Vendor address » Vendor postal / zip code » Vendor city » Vendor state / province 3. Next, user is required to select the Employee Master table for analysis from a dropdown list. 4. Lastly, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Employee address » Employee postal / zip code » Employee city » Employee state / province Note: The HR04 Smart App normalizes certain fields across both tables to improve duplicates testing. These normalized—or 'clean'—fields are available for selection in the dropdown list alongside their original counterparts and can be identified by the '_clean' suffix (e.g., Address_clean). You may choose either the normalized field or the original. However, duplicate checks will always be based on the normalized address field from both tables. For more details on which fields are included in the resulting output table, please refer to the OUTPUT column on the right.	**From Vendor Master:** • Vendor ID - character or numeric data type acceptable • Vendor address - character data type only acceptable • Vendor postal / zip code - character data type only acceptable • Vendor city - character data type only acceptable • Vendor state / province - character data type only acceptable **From Employee Master:** • Employee ID - character or numeric data type acceptable • Employee address - character data type only acceptable • Employee postal / zip code - character data type only acceptable • Employee city - character data type only acceptable • Employee state / province - character data type only acceptable	**Table** The output table shows instances of duplicate addresses found in the **Vendor Master** and **Employee Master** tables. The duplicates testing is based on the normalization of the original address field from both the tables. For example, an address such as **100 N. E. ADAMS** street in the **Vendor Master** table and an address such as **100 North E. Adams St** in the Employee Master table, will be reported as duplicates, as they will be analyzed as **100 ADAMS ST N E,** and hence considered as a duplicate. In the final output table, you'll see normalized fields from both tables, and any duplicate records are listed one after the other for easy review. Note: Case sensitivity does not apply in this duplicate address test because the analysis is performed on the normalized version of the original address field.
HR05 - SOD Approver Updater Employee To ensure that all changes to employee records are valid and authorized. Identify payroll transactions where updates to the master payroll file have been approved by the same individual.	*Employee Master Change History table* 1. To begin with, user is required to select the Employee Master Change History table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Updated by / Updater » Approved by / Approver » Field that identifies the Transaction type - typically, this field will contain values such as 'create', 'update', etc. 3. Next, user is given the ability to select/specify the indicator for the Updater, e.g., is the Updater allowed to just 'create' only or just 'update' only? Essentially, it's asking you to identify which action, e.g. Create or Update, in the dropdown corresponds to the role of the Updater? The data values listed in the dropdown for selection will be the same ones as found in the field that identifies the transaction type (see last bullet above), e.g., Create, Update. Note: Any other similar file containing the fields listed in the **REQUIRED FIELDS** column on the right may also be selected at run time.	• Approver ID / Name - character data type only acceptable • Updater ID / Name - character data type only acceptable • Transaction / Event type, e.g. Create, Update - character data type only acceptable	**Table** The output table shows instances where the **Updater** is the same as the **Approver** and where the transaction type selected (at run time) is the same as the indicator type specified in the data. For example, suppose that in your data you have a record where the **Updater** and **Approver** is Jane Doe and where the indicator for the Updater is **'Create'.** If at run time, **'Create'** was selected as the transaction type, then this record would be reported in the output table as a potential Segregation of Duties (SoD) issue. Note: The comparison between the data values in **Approver ID** and **Updater ID** is case-sensitive. Likewise, the comparison between the selected transaction type and the indicator type value is also case-sensitive.

HR Analytics - SmartApps, continued

ARBUTUS
Powerful Analytics Simplified

SMARTAPP Description	PARAMETERS/USER INPUTS/SELECTIONS *Italics indicate required files.*	REQUIRED FIELDS	OUTPUT
HR06 - Terminated Employees To ensure only active employees receive payroll and benefits. Identify payroll transactions where terminated employees are paid X Number of Days or more days past their termination date.	*Payroll* *Employee Master* 1. To begin with, user is required to enter the maximum acceptable gap (number of days) between termination and payroll dates. The input prompt will only accept a positive whole number. 2. Next, user is required to select the Employee (Terminations) table for analysis from a dropdown list. 3. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Termination date 4. Next, user is required to select the Payroll table for analysis from a dropdown list. 5. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Termination date	**From Employee (Terminations) table:** • Employee ID - character or numeric data type acceptable • Termination date - date/datetime data type only acceptable **From Payroll table:** • Employee ID - character or numeric data type acceptable • Payroll date - date/datetime data type only acceptable	**Table** The output table shows records where the number of days difference calculated between the termination date and the payroll date is greater than or equal to the maximum acceptable gap (specified at run time) for the same employee. For example, suppose that the termination date for **Employee_A** was **1 Nov 2025,** the payroll date for this same employee was **8 Nov 2025**, and the maximum acceptable gap specified was 5, then this record will be reported in the output table as one of the exceptions. Note: The comparison between the two **Employee ID** fields is case-sensitive, provided they are of character type.
HR07 - SOD Approver Entry Time To ensure all time entered reflects actual time worked. Identify cases where the time is entered and approved by the same individual.	*Employee Time Card Data* 1. User is required to select the Time Card Data table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Entered by » Approved by	• Employee ID - character or numeric data type acceptable • Entered by - character data type only acceptable • Approved by - character data type only acceptable	**Table** The output table shows records where the **Entered by** data value is the same as the **Approved by** data value. For example, suppose that there is a record where the **Entered by** value in the data is **John Doe** and the **Approved by** value is also **John Doe**, then this record will be reported in the output table as an exception. Note: The comparison between the data values in **Entered by** and **Approved by** is case-sensitive.
HR08 - Time Entry vs Expected Hour To ensure all time entered in system reflects expected time worked. Identify time and attendance transaction variances where Actual Time Worked exceeds Scheduled Time Worked based on a Percentage Variance on scheduled hours per employee.	*Time Data* 1. First, user is required to select the Time Data table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Work date / Day worked » Hours (scheduled to work) » Hours worked (actual hours worked) 3. Next, user is required to specify the Start and End dates as the period for this analysis. 4. Lastly, user is required to specify the maximum acceptable variance between the scheduled hours and the actual hours worked.	• Employee ID - character or numeric data type acceptable • Scheduled Time Worked (hours) - numeric data type only acceptable • Actual Time Worked (hours) - numeric data type only acceptable"	**Table** The output table shows records for the days worked based on the specified start and end dates and where the variance calculated between the scheduled hours and the actual hours exceeds the maximum acceptable percentage variance specified. For example, suppose an employee is scheduled to work 8 hours but actually worked 13 hours. The variance percentage calculated would be 62.50%. If the maximum acceptable variance specified is 50%, and this work activity falls within the defined date range, the record will be flagged as an exception and included in the output table.

HR Analytics - SmartApps, continued

ARBUTUS
Powerful Analytics Simplified

SMARTAPP Description	PARAMETERS/USER INPUTS/SELECTIONS *Italics indicate required files.*	REQUIRED FIELDS	OUTPUT
HR09 - Overtime Threshold To ensure all overtime transactions are valid. Identify payroll transactions where the overtime hours equals to or exceeds a Percentage Variance based on standard hours.	*Payroll* First, user is required to select the Time Data table for analysis from a dropdown list. This could also be your Payroll data. Whichever, it must contain the fields listed in the ***REQUIRED FIELDS*** column on the right. 1. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Work date / Day worked » Regular hours » Overtime hours 2. Next, user is required to specify the Start and End dates as the period for this analysis. 3. Lastly, user is required to specify the variance percentage threshold to determine the acceptable variance between the regular hours worked and the overtime hours worked.	• Employee ID - character or numeric data type acceptable • Work date / Day worked - date/ datetime data type only acceptable • Regular hours worked - numeric data type only acceptable • Overtime hours worked - numeric data type only acceptable	**Table** The output table shows records for the days worked based on the specified start and end dates and where the variance calculated between the regular hours worked and the overtime hours worked exceeds the acceptable percentage variance threshold specified. For example, suppose that the acceptable percentage variance threshold specified was 30%, then an employee record with regular hours of 8 and overtime hours of 3 would be reported in the output table as an exception (given a variance of 37.5) - assuming the day worked on that record is within the start and end dates specified.
HR10 - SOD Approver Adjuster Payroll To ensure all adjustments to the payroll transactions are authorized. Identify payroll transactions adjusted and approved by the same individual.	*Payroll* 1. First, user is required to select the Payroll table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Adjusted by / Adjuster » Approved by / Approver	• Employee ID - character or numeric data type acceptable • Adjusted by - character data type only acceptable • Approved by - character data type only acceptable"	**Table** The output table shows records where the **Adjusted by** data value is the same as the **Approved by** data value. For example, suppose that there is a record where the **Adjusted by** value in the data is **John Doe** and the **Approved by** value is also **John Doe**, then this record will be reported in the output table as an exception. Note: The comparison between the data values in **Entered by** and **Approved by** is case-sensitive.
HR11 - SOD Termination Enter vs Approve To ensure all termination calculations are authorized. Identify terminations where the transaction is created and approved by the same individual.	*Employee Master / Terminations* 1. First, user is required to select the Employee Master/Terminations table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Entered (Created) by » Approved by / Approver	• Employee ID - character or numeric data type acceptable • Entered by - character data type only acceptable • Approved by - character data type only acceptable"	**Table** The output table shows records where the **Entered by** data value is the same as the **Approved by** data value. For example, suppose that there is a record where the **Entered by** value in the data is **Jane Doe** and the **Approved by** value is also **Jane Doe,** then this record will be reported in the output table as an exception. Note: The comparison between the data values in **Entered by** and **Approved by** is case-sensitive.

HR Analytics - SmartApps, continued

ARBUTUS
Powerful Analytics Simplified

SMARTAPP Description	PARAMETERS/USER INPUTS/SELECTIONS *Italics indicate required files.*	REQUIRED FIELDS	OUTPUT
HR12 - SOD Approver Entry Manual Payroll To ensure all manual payroll payments are authorized and valid. Identify payroll transactions where the same individual created and approved the payment.	*Payroll Transactions* 1. First, user is required to select the Payroll Transactions table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table: » Employee ID number » Created by » Approved by / Approver Note: It is expected that the table selected for analysis already contains manual payroll payment entries only, as this SmartApp does not test to identify the type of entry, e.g., if manual vs automated.	• Employee ID - character or numeric data type acceptable • Created by - character data type only acceptable • Approved by - character data type only acceptable	**Table** The output table shows records where the **Created by** data value is the same as the **Approved by** data value. For example, suppose that there is a record where the **Created by** value in the data is **Jane Doe** and the **Approved by** value is also **Jane Doe**, then this record will be reported in the output table as an exception. Note: The comparison between the data values in **Entered by** and **Approved by** is case-sensitive.
HR13 - SOD Approver Entry Payroll To ensure all employee records created are approved and valid. Identify payroll transactions where employee in the payroll master file were created and approved by the same individual.	*Payroll Master* 1. First, user is required to select the Payroll Master table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table. » Transaction ID » Entered by » Approved by / Approver Note: It is expected that the table selected for analysis already contains the necessary payroll transaction types, as this SmartApp does not identify or validate transaction types—even though one of the required fields for this analysis is the Transaction ID.	• Transaction ID - character or numeric data type acceptable • Entered by - character data type only acceptable • Approved by - character data type only acceptable	**Table** The output table shows records where the **Entered by** data value is the same as the **Approved by** data value. For example, suppose that there is a record where the **Entered by** value in the data is **John Doe** and the **Approved by** value is also **John Doe**, then this record will be reported in the output table as an exception. Note: The comparison between the data values in **Entered by** and **Approved by** is case-sensitive.
HR14 - Blank Critical Employee Data Elements To ensure that key employee data is not missing for subsequent analysis. Identify records with key employee data elements containing blanks in the data and report on them.	*Employee Master* 1. First, user is required to select the Employee Master table for analysis from a dropdown list. Next, user specifies which of the following tests to run to identify blanks - the default is ***'All Tests'***: » Bank Account ID / number / details » Phone number » Tax ID number » Employee ID number » Email address 2. Based on the selection (above tests), user is given the ability to select from a dropdown list the field associated with the test(s) that was selected earlier.	• Bank account ID / number / details - character data type only acceptable • Phone number - character data type only acceptable • Tax ID number - character data type only acceptable • Employee ID - character or numeric data type acceptable • Email address - character data type only acceptable	**Table** The output table includes only records where the tested field(s) contain blank values. For each of the five tests, the table provides a corresponding column with descriptive text (e.g., **'Bank Account is blank'**) for the field(s) identified as blank. For example, if the **Bank Account ID** and **Employee ID** fields in record #3 contain blanks, the corresponding columns in that record will display descriptive texts such as **'Bank Account is blank'** and **'Employee ID is blank.'** Even if only one of the five tests was selected, the output table would still include all five corresponding columns. However, in this case, only the column associated with the selected test will display descriptive text where applicable.

HR Analytics - SmartApps, continued

ARBUTUS
Powerful Analytics Simplified

SMARTAPP Description	PARAMETERS/USER INPUTS/SELECTIONS *Italics indicate required files.*	REQUIRED FIELDS	OUTPUT
HR15 - Invalid Employee Numbers To ensure that employee numbers have a consistent length and format to meet company/policy requirements. Identify all the different types of formats found in the employee number field, and include a total count for each of the formats found.	*Employee Master* 1. First, user is required to select the Employee Master table for analysis from a dropdown list. 2. Next, user selects the Employee number field required for this analysis from a dropdown populated with fields from the previously chosen table. Note: This SmartApp test can also validate other fields that typically contain ID numbers or data with specific formats, such as Social Insurance Numbers (SINs) or postal/ZIP codes.	• Employee ID number - character or numeric data type acceptable	**Table** The output table displays one record for each distinct formats detected in the field tested for validity. Additionally, a column in the table shows the count of records associated with each format. For example, if the **Employee Number** field contains two possible formats, such as **12345-67** and **123-45**, the output table will display two records. The first record will show the format **99999-99** with a count of records matching this format, and the second will show **999-99** with its corresponding count.
HR16 - Employee Vendor Bank Match To ensure that no employee and vendor share the same bank account or bank ID, which could indicate potential fraud, conflict of interest, or policy violations. Identify matched entries from the Vendor Master and Employee Master tables based on the Bank ID number and the Bank Account ID number.	*Vendor Master* *Employee Master* 1. First, user is required to select the Vendor Master table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the Vendor Master table. » Vendor ID number » Vendor Bank ID number » Vendor Bank Account ID number 3. Next, user is required to select the Employee Master table for analysis from a dropdown list. 4. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the Employee Master table. » Employee ID number » Employee Bank ID number » Employee Bank Account ID number Note: Matches between the Vendor Master and Employee Master tables are based on two key fields: Bank ID number and Bank Account ID number. Matches will still be found even if the data in these key fields differ in case (e.g., A001 vs a001), because the fields are internally normalized by converting all values to uppercase before the matching process begins. Other normalization processes are also applied to ensure consistency with the data values in the key fields.	**From Vendor Master table**: • Vendor ID - character data type only acceptable • Vendor Bank ID - character data type only acceptable • Vendor Bank Account ID - character data type only acceptable **From Employee Master table:** • Employee ID - character data type only acceptable • Employee Bank ID - character data type only acceptable • Employee Bank Account ID - character data type only acceptable	**Table** The output table includes records from the **Vendor Master** and **Employee Master** tables only where the key fields—**Bank ID number** and **Bank Account ID number**—match. The table displays three fields from each source table; refer to the **REQUIRED FIELDS** column on the left for the complete list. Only matching entries from each of the two tables are reported and included in the output table.

HR Analytics - SmartApps, continued

ARBUTUS
Powerful Analytics Simplified

SMARTAPP Description	PARAMETERS/USER INPUTS/SELECTIONS *Italics indicate required files.*	REQUIRED FIELDS	OUTPUT
HR17 - Emp Master Changes Weekend To ensure that any changes made to the employee master are not done on a weekend. Identify records where a selected date field has dates that fall on a weekend based on a specified date range.	*Employee Master Change Table* 1. First, user is required to select the Employee Master Change table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the previously chosen table. » Change date (a field that identifies when a change was made) 3. Next, through a dialog, user is required to specify the Start and End dates for the period to be tested for weekend days. 4. Next, user is given the ability to specify the day(s) considered as a weekend by selecting the day(s) from a dropdown list populated with all seven days in the week. Note: This Smart App test can also be applied to other data files that include a date field, helping identify and flag records or items processed on a weekend.	• Change date field (field to indicate when a change was made) - date data type only acceptable	**Table** The output table displays all records where the tested date field falls on a weekend and within a specified range, both as specified by the user. For example, you can select a table and choose a date field (such as Date Modified). Next, specify the start and end dates to define the range for testing, and indicate which days should be considered weekends. The test will then identify records where the selected date field falls on a weekend within the specified range.
HR 18 - Multiple Changes Basic Salary To ensure that any changes to basic salary or pay are detected and reviewed for accuracy and compliance. Identify records where there are two or more entries for the same employee, and the basic salary or pay amount differs across those records.	*Payroll Master* 1. First, user is required to select the Payroll Master table for analysis from a dropdown list. 2. Next, user selects the following fields required for this analysis from a dropdown populated with fields from the Payroll Master table. » Employee ID number » Basic Salary/Pay Note: This Smart App test can also be applied to other data files that contain a unique identifier field, e.g., Vendor ID, and a numeric amount field, e.g., Order Amount, with the purpose of identifying changes made to the amount field for each unique identifier.	• Employee ID - character or numeric data type acceptable • Basic Salary - numeric data type only acceptable"	**Table** The output table displays records where the basic salary or pay differs across entries for the same employee. For example, if there are two or more records for the same employee, and each record shows a different basic salary or pay amount, those discrepancies will be included in the output table.