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TRAP

Travel Reimbursement Application Processing

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Requirement Based Tests

1. FORM/FIELD VALIDATION	3
1.A ONLY VALIDATE FORMS ON SUBMIT NOT ON SAVE	3
1.B VALIDATING DATE FORMAT	3
1.C VALIDATING DATETIME FORMAT	4
1.D DATE AND DATETIME RANGE VALIDATION	4
1.E VALIDATE THAT ALL REQUIRED FORM FIELDS ARE FILLED	5
1.F PHONE NUMBER FORMAT VALIDATION	6
1.G SUPPORT FOR MULTIPLE CURRENCY FORMATS	6
1.H EMAIL ADDRESS VALIDATION	7
1.I REQUIRED FORM FIELDS	7
2. TRAVEL	9
2.A VERIFY THAT THE CARRIER IS A VALID US CARRIER	9
2.B PER DIEM CEILING ON LODGING	9
2.C ONLY COVER 75% OF MEALS ON FIRST AND LAST DAY	10
2.D 75% OF INCIDENTALS ON FIRST AND LAST DAY.	10
2.E ONLY ONE (1) CHECKED PIECE OF LUGGAGE FOR AIR TRAVEL	11
2.F FAMILY MEMBER EXPENSES ARE NOT REIMBURSABLE	11
2.G CAR RENTAL	12
2.H PERSONAL CAR	13
2.I SUPPORTED TRANSPORTATION TYPES	14
2.J 'OTHER' EXPENSES	14
2.K PROPER CURRENCY CONVERSION	15
2.L TRANSPORTATION MILEAGE	15
2.M MEAL PER DIEM	16
2.N INCIDENTAL PER DIEM	17
3. GRANTS	18
3.A USER SPLITTING REIMBURSEMENT ACROSS MULTIPLE GRANTS	18
3.B "HOLD" FUNDS AFTER SUCCESSFUL AUDIT	18
3.C GRANT RESTRICTED TRANSPORTATION PROVIDER	19
3.D GRANT APPROVER NAME	19
3.E ALCOHOL UNDER NON-SPONSORED GRANT	19
3.F GENERAL GRANT SPECIFIC RESTRICTIONS	20
4. FORM STATE REQUIREMENTS	21

4.A GENERATE A LIST OF LOADABLE FORMS	21
4.B SAVED FORMS PERSIST WHILE TRAP IS RUNNING	21
4.C LOAD A FORM	21
4.D SUBMIT A FORM	22
4.E SAVE A FORM	22
4.F REMOVE A FORM	23
5. POST-AUDIT STATE	24
5.A AUDITED FORM STILL LOADABLE/SAVABLE	24
5.B ERROR HANDLING	24
5.C TRAP OUTPUT	24
5.D USER FULL NAME FORMAT	25
5.E PRESENTATION	25
5.F USERNAME	26
5.G VISA STATUS	26
6. NON-FUNCTIONAL REQUIREMENTS	27
6.A DATABASE TIMEOUTS	27
6.B BUSINESS LOGIC MODIFICATIONS	27

1. Form/Field Validation

1.A ONLY VALIDATE FORMS ON SUBMIT NOT ON SAVE

Description	Check that a form is only validated during <i>Form Submission</i> and not during <i>Form Saving</i> .
Text Inputs	-
Expected Results	<i>Form Saving</i> , valid input in <i>Form Fields</i> : <ul style="list-style-type: none">it shall not be rejected the form shall be saved for later editing <i>Form Saving</i> , invalid input in <i>Form Fields</i> : <ul style="list-style-type: none">it shall not be rejected the form shall be saved for later editing <i>Form Submission</i> , valid input in <i>Form Fields</i> : <ul style="list-style-type: none">it shall not be rejected and auditing will continue <i>Form Submission</i> , invalid input in <i>Form Fields</i> : <ul style="list-style-type: none">an appropriate error message shall be returned to the user specifying which <i>Form Fields</i> contain errors and instructions on how to correct them.
Dependencies	4.c (Load a form)
Initialization	Create 2 new forms. 1) Create a new form and fill it with valid data. 2) Create another new form and fill it with any amount of invalid data (e.g. bad formatting, out of range dates)
Test Steps	For each form: 1) Save the form. 2) Load the form. 3) Submit the form.
Owner	Dylan Bettermann

1.B VALIDATING DATE FORMAT

Comment [1]: Dylan Bettermann:
Review

Description	Checks that dates have been submitted with the correct format.
Text Inputs	One or more of the following: <ul style="list-style-type: none"><Other Expense Date><Transportation Date>
Expected Results	If the date input is formatted correctly: <ul style="list-style-type: none">it shall not be rejected and auditing will continue<ul style="list-style-type: none">Form 1 If the date input is formatted incorrectly: <ul style="list-style-type: none">an appropriate error message shall be returned to the user specifying the correct format<ul style="list-style-type: none">Form 2

Dependencies	-
Initialization	1) Create a new form containing all valid values, including valid date formats for <i><Other Expense Date></i> and <i><Transportation Date></i> . 2) Create a new form. Fill out the form with valid values except for any date fields. Fill in <i><Other Expense Date></i> or <i><Transportation Date></i> with an invalid date format.
Test Steps	Submit the two forms for audit.
Owner	Dylan Bettermann

1.C **VALIDATING DATETIME FORMAT**

Comment [2]: Dylan Bettermann:
Review

Description	Checks that datetimes have been submitted with the correct format.
Text Inputs	One or more of the following: <ul style="list-style-type: none"> • <i><Arrival Datetime></i> • <i><Departure Datetime></i>
Expected Results	<p>If the date input is formatted correctly:</p> <ul style="list-style-type: none"> • it shall not be rejected and auditing will continue <ul style="list-style-type: none"> ○ Form 1 <p>If the date input is formatted incorrectly:</p> <ul style="list-style-type: none"> • an appropriate error message shall be returned to the user specifying the correct format <ul style="list-style-type: none"> ○ Form 2
Dependencies	-
Initialization	1) Create a new form containing all valid values, including valid datetime formats for <i><Arrival Datetime></i> and <i><Departure Datetime></i> . 2) Create a new form. Fill out the form with valid values except for any datetime fields. Fill in <i><Arrival Datetime></i> or <i><Departure Datetime></i> with an invalid datetime format.
Test Steps	Submit the two forms for audit.
Owner	Dylan Bettermann

1.D **DATE AND DATETIME RANGE VALIDATION**

Comment [3]: Dylan Bettermann:
Review

Description	Checks that only dates and datetimes that are prior to the form submission date are accepted. Also checks that all departure times come before their corresponding arrival times.
Text Inputs	One or more of the following: <ul style="list-style-type: none"> • <i><Other Expense Date></i> • <i><Transportation Date></i> • <i><Arrival Datetime></i> • <i><Departure Datetime></i>

Expected Results	<p>If the date or datetime input is prior to form submission date and is a valid range:</p> <ul style="list-style-type: none"> it shall not be rejected and auditing will continue <ul style="list-style-type: none"> Form 1 <p>If the date or datetime input is not prior to the form submission date:</p> <ul style="list-style-type: none"> an appropriate error message shall be returned to the user specifying that the date needs to be prior to <i>Form Submission</i> <ul style="list-style-type: none"> Form 2 <p>If the date or datetime input is an invalid range:</p> <ul style="list-style-type: none"> an appropriate error message shall be returned to the user specifying that the date or datetime range is not valid (i.e. departure date after arrival date) <ul style="list-style-type: none"> Form 3
Dependencies	-
Initialization	<p>1) Create a form that has both <i><Departure Datetime></i> and <i><Arrival Datetime></i> prior to the date of submitting the form. Also, <i><Departure Datetime></i> comes before <i><Arrival Datetime></i></p> <p>2) Create a form that has both the <i><Departure Datetime></i> and the <i><Arrival Datetime></i> as a datetime in the future. Every other <i>Form Field</i> shall contain valid input.</p> <p>3) Create a form that has the <i><Arrival Datetime></i> chronologically before <i><Departure Datetime></i>. Every other <i>Form Field</i> shall contain valid input.</p>
Test Steps	Submit each form for audit.
Owner	Dylan Bettermann

1.E VALIDATE THAT ALL REQUIRED FORM FIELDS ARE FILLED

Description	This will check that <i>TRAP</i> will only accept <i>reimbursement forms</i> that contain data in all the required <i>Form Fields</i> .
Text Inputs	To get a complete list of inputs, refer to the <i>TRAP Input Dictionary</i> in the requirements document.
Expected Results	<p>If the <i>form fields</i> are correctly formatted and present:</p> <ul style="list-style-type: none"> the <i>form</i> shall pass <i>auditing</i>. <p>If <i>form fields</i> are not present or correctly formatted:</p> <ul style="list-style-type: none"> a <i>status error</i> shall be returned to the <i>user</i>
Dependencies	-
Initialization	Create N amount of forms, where N is the number of <i>form fields</i> in the <i>reimbursement forms</i> .
Test Steps	
Owner	Dylan Bettermann

Comment [4]: Dylan Bettermann:
Is this possible?

Comment [5]: Dylan Bettermann:
I can progressively add form field values, but does that really test required fields?

1.F PHONE NUMBER FORMAT VALIDATION

Comment [6]: Dylan Bettermann:
Review

Description	Checks that all telephone numbers are in a specific format.
Text Inputs	<Emergency Contact Phone>
Expected Results	<p>If the phone number input is formatted correctly:</p> <ul style="list-style-type: none">• it shall not be rejected and auditing will continue<ul style="list-style-type: none">◦ Form 1 <p>If the date input is formatted incorrectly:</p> <ul style="list-style-type: none">• an appropriate error message shall be returned to the user specifying the correct format<ul style="list-style-type: none">◦ Form 2
Dependencies	-
Initialization	<p>1) Create a new form containing all valid values, including a valid phone number format for <Emergency Contact Phone>.</p> <p>2) Create a new form. Fill out the form with valid values except for any phone number fields. Fill in <Emergency Contact Phone> with an invalid phone number format.</p>
Test Steps	Submit both forms for audit.
Owner	Dylan Bettermann

1.G SUPPORT FOR MULTIPLE CURRENCY FORMATS

Comment [7]: Dylan Bettermann:
Review

Description	This checks that multiple currency formats are supported by the <i>TRAP</i> system.
Text Inputs	<p>A string representing a currency amount followed by the currency type also represented as a string. If the currency type is an empty string, the <i>TRAP</i> system will interpret the currency amount as American dollars.</p> <p>Could be one of the following:</p> <ul style="list-style-type: none">• <Incidental Currency>• <Lodging Currency>• <Other Expense Currency>
Expected Results	<p>If the currency type is correctly formatted:</p> <ul style="list-style-type: none">• it shall not be rejected and auditing will continue.<ul style="list-style-type: none">◦ Form 1 - \$100 USD◦ Form 2 - \$X USD == 100 EUR <p>If the currency type is incorrectly formatted:</p> <ul style="list-style-type: none">• an appropriate status error shall be returned to the user specifying the correct format.<ul style="list-style-type: none">◦ Form 3 - ABC is not a recognized currency type◦ Form 4 - ABC is not a recognized expense amount or currency type
Dependencies	-

Initialization	1) Create a form with all valid data, except do not include data for one of the expense amounts with a currency type. For the expense amount fill in \$100. Leave the currency type blank. 2) Create a form with all valid data, except do not include data for one of the expense amounts with a currency type. For the expense amount, fill in \$100. For the currency type, fill in EUR. 3) Create a form with all valid data, except do not include data for one of the expense amounts with a currency type. For the expense amount, fill in \$100. For the currency type, fill in ABC. 4) Create a form with all valid data, except do not include data for one of the expense amounts with a currency type. For the expense amount, fill in ABC. For the currency type, fill in ABC.
Test Steps	Submit the forms for audit.
Owner	Dylan Bettermann

1.H EMAIL ADDRESS VALIDATION

Comment [8]: Dylan Bettermann:
Review

Description	This checks that email addresses are submitted in a specified format.
Text Inputs	<email address>
Expected Results	<p>If the <email address> is correctly formatted:</p> <ul style="list-style-type: none"> it shall not be rejected and auditing will continue <ul style="list-style-type: none"> Form 1 <p>If the <email address> is incorrectly formatted or not present:</p> <ul style="list-style-type: none"> an appropriate error message shall be returned to the user specifying the correct format <ul style="list-style-type: none"> Form 2
Dependencies	-
Initialization	1) Create a form that contains all valid input, including <email address>. 2) Create a form that contains valid input except for the <email address>. Input a string that does not match the specified format in the <email address> field.
Test Steps	Submit the forms for auditing.
Owner	Dylan Bettermann

1.I REQUIRED FORM FIELDS

Description	This checks that all required form fields are present in the submitted form.
Text Inputs	A full set of inputs representing a complete reimbursement form. See the <i>TRAP Input Dictionary</i> in the requirements document for more information on required fields.
Expected Results	If a required field is missing, <i>TRAP</i> shall return a <i>status error</i> . <i>TRAP</i> shall do this if any of

	<p>the required fields are missing.</p> <p>If all required fields are present and valid, <i>TRAP</i> shall successfully audit the form and return a <i>status ok</i>.</p>
Dependencies	-
Initialization	<p>1) Create a form that contains all valid input</p> <p>2) Submit the form and verify it successfully audits</p> <p>3) For each of the required fields, resubmit the form with one of these fields missing and verify a <i>status error</i> is returned. Do this for all required fields.</p>
Test Steps	Submit the forms for auditing.
Owner	Andrew Helgeson

2. Travel

2.A VERIFY THAT THE CARRIER IS A VALID US CARRIER

Description	Checks that the air carrier is a US based carrier.
Text Inputs	<ul style="list-style-type: none">• <Transportation Type>• <Transportation Carrier>
Expected Results	If the transportation type is air and the transportation carrier is a valid us carrier <ul style="list-style-type: none">• No errors If the carrier is a non US carrier <ul style="list-style-type: none">• Errors
Dependencies	4.d form submit
Initialization	Create 2 new forms. 1) On form 1 put <transportation type> air and put the <transportation carrier> as a valid US carrier. 2) On form 2, put <transportation type> air and put the <transportation carrier> as a non US carrier.
Test Steps	Submit the form(s) to TRAP for audit.
Owner	Brian Maurer

Comment [9]: Dylan Bettermann:
Reviewed. I did something slightly different for expected results. I explained what the general case would be, and then said a certain form fell under that category. See 1.h for reference.

2.B PER DIEM CEILING ON LODGING

Description	Checks if lodging exceeds the capped per diem amount, and if it does, the amount that exceeds the cap is not reimbursed.
Text Inputs	<ul style="list-style-type: none">• <Lodging amount>• <Lodging currency>• <Lodging Date>• Per diem amount for lodging
Expected Results	If \$200 is the capped per diem amount for reimbursements: <ul style="list-style-type: none">• any amount about the cap (\$200) will not be reimbursed<ul style="list-style-type: none">○ Form 1 - \$200 reimbursed/\$50 not reimbursed If \$300 is the capped per diem amount for reimbursements: <ul style="list-style-type: none">• any amount about the cap (\$300) will not be reimbursed<ul style="list-style-type: none">○ Form 1 - \$250 reimbursed/\$0 not reimbursed
Dependencies	-
Initialization	1) Create a form with all valid input. Enter a lodging amount for \$250 for a single day.
Test Steps	Submit the form for auditing.
Owner	Dylan Bettermann

Comment [10]: Dylan Bettermann:
Review

2.C ONLY COVER 75% OF MEALS ON FIRST AND LAST DAY

Comment [11]: Dylan Bettermann:
Review

Description	Checks that only 75% of the per diem meals can be reimbursed on the first and last day of travel.
Text Inputs	<ul style="list-style-type: none">List of meals for the first and last travel daysmeal per diem from the perDiemDB
Expected Results	<p>If the form contains meals on the first day:</p> <ul style="list-style-type: none">Only cover 75% of the meal expense<ul style="list-style-type: none">Form 1 - \$7.50 of the expense covered by grant <p>If the form contains meals on the last day:</p> <ul style="list-style-type: none">Only cover 75% of the meal expense<ul style="list-style-type: none">Form 2 - \$11.25 of the expense covered by grant <p>If the form contains meals between the first and last day:</p> <ul style="list-style-type: none">Cover 100% of the meal expense<ul style="list-style-type: none">Form 3 - \$30 of the expense covered by grant
Dependencies	-
Initialization	<ol style="list-style-type: none">1) Create a form with valid data. Submit meal information that contains a meal for \$10 the first day.2) Create a form with valid data. Submit meal information that contains a meal for \$15 the last day.3) Create a form with valid data. Submit meal information that contains a meal for \$30 between the first and last day.
Test Steps	Submit the forms for auditing
Owner	Dylan Bettermann

2.D 75% OF INCIDENTALS ON FIRST AND LAST DAY.

Description	Check to make sure that reimbursement requests are only reimbursed for 75% of their cost on the first and last day of a trip.
Text Inputs	–
Expected Results	<ol style="list-style-type: none">1) Final cost should be \$7.502) Final cost should be \$7.503) Final cost should be \$154) Final cost should be \$7.50
Dependencies	4.d submit form
Initialization	<p>Create 4 valid forms.</p> <ol style="list-style-type: none">1) A form with a trip that is at least 2 days. Add an incidental purchase on the first day to the form worth \$10.2) A form with a trip that is at least 2 days. Add an incidental purchase on the last day to

	the form worth \$10. 3) A form with a trip that is at least 2 days. Add an incidental purchase on the first and last day to the form worth \$10 each. 4) A form for a trip with only one day. Add an incidental purchase to the day the trip was taken worth \$10.
Test Steps	Submit all forms for validation
Owner	Brian Maurer

2.E ONLY ONE (1) CHECKED PIECE OF LUGGAGE FOR AIR TRAVEL

Comment [12]: Dylan Bettermann:
Review

Description	Check that there is only one checked piece of luggage that can be use for air travel
Text Inputs	<ul style="list-style-type: none"> • <i><Transportation Date></i> • <i><Transportation Amount></i> • <i><Transportation Currency></i>
Expected Results	<p>If there is more than one checked bag:</p> <ul style="list-style-type: none"> • the most expensive <i>n</i> baggage expenses will be considered for reimbursement <ul style="list-style-type: none"> ◦ Form 1 - the \$20 bag is covered <p>If the baggage expense exceeds the maximum baggage expense of \$25:</p> <ul style="list-style-type: none"> • <i>TRAP</i> only earmarks \$25 for the expense reimbursement <ul style="list-style-type: none"> ◦ Form 2 - only \$25 of the \$30 baggage expense is covered by grants
Dependencies	–
Initialization	<p>1) Create a new form that contains valid values. Have 3 bags: \$10, \$15, \$20.</p> <p>2) Create a new form that contains valid values. Have a baggage expense that is \$30.</p>
Test Steps	Submit the forms for auditing
Owner	Dylan Bettermann

2.F FAMILY MEMBER EXPENSES ARE NOT REIMBURSABLE

Comment [13]: Dylan Bettermann:
Review

Description	Checks if family members are reimbursable
Text Inputs	<ul style="list-style-type: none"> • <i><Other expense justification (n)></i> • <i><Incidental justification (n)></i>
Expected Results	<p>If <i><Other expense justification></i> or <i><Incidental justification></i> contains one of the blacklist terms (family members):</p> <ul style="list-style-type: none"> • an error would occur and <i>TRAP</i> would tell the <i>user</i> that family member expenses are not reimbursed. <ul style="list-style-type: none"> ◦ Form 1 - \$100 expense will not be reimbursed
Dependencies	-
Initialization	Create a blacklist of known family member terms for the <i>TRAP</i> system to use.

Test Steps	1) Create a form with all valid data. In <i><Other expense justification></i> or <i><Incidental justification></i> , include an expense from a family member for \$100. Put the family member's name in the justification field.
Owner	Dylan Bettermann

2.G CAR RENTAL

Comment [14]: Dylan Bettermann:
Review

Description	Check the datetimes and personal car status when dealing with rental cars.
Text Inputs	<ul style="list-style-type: none"> • <i><Num transportation></i> • <i><Transportation date></i> • <i><Transportation type (n)></i> • <i><Transportation rental (n)></i> • <i><Transportation carrier (n)></i> • <i><Transportation amount (n)></i> • <i><Transportation currency (n)></i>
Expected Results	<p>If all of the inputs contain valid data, the car dates are between the <i><arrival datetime></i> and the <i><departure datetime></i>, and the <i>user</i> did not use a personal car the same day:</p> <ul style="list-style-type: none"> • the input will not be rejected and the auditing will continue. <ul style="list-style-type: none"> ◦ Form 1 <p>If some of the inputs are missing:</p> <ul style="list-style-type: none"> • an appropriate error message will be displayed telling the <i>user</i> which <i>form fields</i> are missing. <ul style="list-style-type: none"> ◦ Form 2 <p>If the personal car dates are not between the specified dates:</p> <ul style="list-style-type: none"> • an appropriate error message will be displayed telling the <i>user</i> that personal car expenses are not covered outside of the <i><departure datetime></i> and the <i><arrival datetime></i>. <ul style="list-style-type: none"> ◦ Form 3 <p>If a personal car expense is claimed on the same day:</p> <ul style="list-style-type: none"> • an appropriate error message will be displayed telling the <i>user</i> that a personal car expense is not covered on the same day as a rental car expense. <ul style="list-style-type: none"> ◦ Form 4
Dependencies	
Initialization	<p>1) Create a new form with valid data. All of the transportation information is also filled out and valid. The input falls between the <i><departure datetime></i> and the <i><arrival datetime></i>, and there was not a personal car used.</p> <p>2) Create a new form with valid data. Some of the transportation input related to personal car expenses is missing.</p> <p>3) Create a new form with valid data. The input related to the personal car expenses contains a datetime that is outside of the <i><departure datetime></i> and the <i><arrival datetime></i>.</p> <p>4) Create a new form with valid data. The <i>user</i> reports a personal car expense the same day a rental car expense is reported.</p>
Test Steps	Submit the forms for audit.

Owner	Dylan Bettermann
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2.H PERSONAL CAR

Comment [15]: Dylan Bettermann:
Review

Description	Check the datetimes and rental car status when dealing with personal cars.
Text Inputs	<ul style="list-style-type: none"> • <i><Num transportation></i> • <i><Transportation date></i> • <i><Transportation type (n)></i> • <i><Transportation rental (n)></i> • <i><Transportation miles travelled (n)></i>
Expected Results	<p>If all of the inputs contain valid data, the car dates are between the <i><arrival datetime></i> and the <i><departure datetime></i>, and the <i>user</i> did not rent a car the same day:</p> <ul style="list-style-type: none"> • the input will not be rejected and the auditing will continue. <ul style="list-style-type: none"> ◦ Form 1 <p>If some of the inputs are missing:</p> <ul style="list-style-type: none"> • an appropriate error message will be displayed telling the <i>user</i> which <i>form fields</i> are missing. <ul style="list-style-type: none"> ◦ Form 2 <p>If the personal car dates are not between the specified dates:</p> <ul style="list-style-type: none"> • an appropriate error message will be displayed telling the <i>user</i> that personal car expenses are not covered outside of the <i><departure datetime></i> and the <i><arrival datetime></i>. <ul style="list-style-type: none"> ◦ Form 3 <p>If a rental car expense is claimed on the same day:</p> <ul style="list-style-type: none"> • an appropriate error message will be displayed telling the <i>user</i> that a rental car expense is not covered on the same day as a personal car expense. <ul style="list-style-type: none"> ◦ Form 4
Dependencies	-
Initialization	<p>1) Create a new form with valid data. All of the transportation information is also filled out and valid. The input falls between the <i><departure datetime></i> and the <i><arrival datetime></i>, and there was not a car rented.</p> <p>2) Create a new form with valid data. Some of the transportation input related to personal car expenses is missing.</p> <p>3) Create a new form with valid data. The input related to the personal car expenses contains a datetime that is outside of the <i><departure datetime></i> and the <i><arrival datetime></i>.</p> <p>4) Create a new form with valid data. The <i>user</i> reports a personal car expense the same day a rental car expense is reported.</p>
Test Steps	Submit the forms for audit.
Owner	Dylan Bettermann

2.1 SUPPORTED TRANSPORTATION TYPES

Comment [16]: Dylan Bettermann:
Review

Description	Check that the transportation type is one of the approved types.
Text Inputs	<Transportation type>
Expected Results	<p>If <Transportation type> is one of the accepted types:</p> <ul style="list-style-type: none">the input will not be rejected and auditing shall continue<ul style="list-style-type: none">Form 1 <p>If <Transportation type> is not one of the accepted types:</p> <ul style="list-style-type: none">a status error shall be returned<ul style="list-style-type: none">Form 2
Dependencies	-
Initialization	<p>1) Create a form that has all valid input, including one of the supported transportation types for <Transportation type>.</p> <p>2) Create a form that has all valid input, except it has a transportation type that is not one of the supported transportation types.</p>
Test Steps	Submit forms for auditing.
Owner	Dylan Bettermann

2.1 'OTHER' EXPENSES

Comment [17]: Dylan Bettermann:
Review

Description	Checks if an other expense is allowed. If so, it checks to see if all the required <i>form fields</i> corresponding to other expenses are filled.
Text Inputs	<ul style="list-style-type: none"><Num other expenses><Other date (n)><Other justification (n)><Other amount (n)><Other currency (n)>
Expected Results	<p>If all of the inputs are filled and valid:</p> <ul style="list-style-type: none">it shall not be rejected and auditing shall continue<ul style="list-style-type: none">Configuration 2, Form 1 <p>If any of the inputs are missing:</p> <ul style="list-style-type: none">an appropriate error message will be displayed to the <i>user</i> indicating which fields are missing<ul style="list-style-type: none">Configuration 2, Form 2 <p>If other expenses are not allowed:</p> <ul style="list-style-type: none">an appropriate error message shall be displayed indicating that the <i>user</i> is not allowed to have other expenses.<ul style="list-style-type: none">Configuration 1, either form
Dependencies	-
Initialization	1) Configure the software so that an other expense is not allowed for the current <i>user</i> .

	2) Configure the software so that an other expense is allowed for the current <i>user</i> .
Test Steps	1) Create a new form that contains valid input, included a completely filled in other expense. 2) Create a new form that contains valid input. Fill out all the <i>form fields</i> corresponding to an other expense except for one.
Owner	Dylan Bettermann

2.K PROPER CURRENCY CONVERSION

Comment [18]: Dylan Bettermann:
Review

Description	Checks to see if currency is converted correctly.
Text Inputs	Any input field that has an expense amount: <ul style="list-style-type: none"> • <Other Expense Amount> • <Transportation Amount>
Expected Results	If a query to the currencyDB does return a result: <ul style="list-style-type: none"> • the amount field will be converted using the conversion rate for the date of the expense <ul style="list-style-type: none"> ◦ Form 1 - 10 EUR \neq 10 USD If a query to the currencyDB does not return a result: <ul style="list-style-type: none"> • a status error shall be returned <ul style="list-style-type: none"> ◦ Form 2 - Currency ABC does not have conversion info available
Dependencies	-
Initialization	-
Test Steps	1) Create a form that contains valid data. Submit 10 EUR as a currency to convert. 2) Create a form that contains valid data. Make up a currency (ABC), so that it does not have conversion info to use. After doing this, submit 10 ABC.
Owner	Dylan Bettermann

2.L TRANSPORTATION MILEAGE

Comment [19]: Dylan Bettermann:
Review

Description	Checks that the amount of miles traveled is a whole number and that the miles were traveled in a personal car. Also, the car cannot be a rental.
Text Inputs	<ul style="list-style-type: none"> • <Transportation type> • <Transportation rental> • <Transportation miles traveled>
Expected Results	If <Transportation miles traveled> is not a whole number or not submitted with a personal car claim: <ul style="list-style-type: none"> • a status error shall be returned <ul style="list-style-type: none"> ◦ Form 1 - non-whole number for miles ◦ Form 2 - claim submitted with non-personal car

	If <i><Transportation miles traveled></i> is correctly formatted: <ul style="list-style-type: none"> the expense shall be calculated at \$0.55 per mile. <ul style="list-style-type: none"> Form 3 - \$17.60
Dependencies	-
Initialization	Create a new form that is completely filled with valid data except for transportation mileage related <i>form fields</i> .
Test Steps	1) Enter a non-whole number for <i><Transportation miles traveled></i> . 2) Enter a value for <i><Transportation type></i> that is not "personal car". 3) Enter "personal car" for <i><Transportation type></i> , "false" for <i><Transportation rental></i> , and 32 miles for <i><Transportation miles traveled></i> .
Owner	Dylan Bettermann

2.M MEAL PER DIEM

Comment [20]: Dylan Bettermann:
Review

Description	Checks that the per diem meal contains the correct inputs. Also checks if the date falls between the <i><departure datetime></i> and the <i><arrival datetime></i> .
Text Inputs	One meal will consist of one of the following set of inputs: <ul style="list-style-type: none"> <i><Breakfast City (n)></i> <i><Breakfast State (n)></i> <i><Breakfast Country (n)></i> <p>or</p> <ul style="list-style-type: none"> <i><Lunch City (n)></i> <i><Lunch State (n)></i> <i><Lunch Country (n)></i> <p>or</p> <ul style="list-style-type: none"> <i><Dinner City (n)></i> <i><Dinner State (n)></i> <i><Dinner Country (n)></i>
Expected Results	If all of the required inputs are provided: <ul style="list-style-type: none"> it shall not be rejected and auditing shall continue <ul style="list-style-type: none"> Form 1 If any of the required inputs are missing: <ul style="list-style-type: none"> it shall be rejected and a status error shall be returned <ul style="list-style-type: none"> Form 2
Dependencies	-
Initialization	1) Create a form with valid data. Have it include complete meal information (i.e. all the <i>form fields</i> associated with the meal are filled out with valid values). 2) Create a form with valid data. Have it include meal information, but have it missing one of the required fields.

Test Steps	Submit the forms for audit.
Owner	Dylan Bettermann

2.N INCIDENTAL PER DIEM

Comment [21]: Dylan Bettermann:
Review

Description	Checks that every incidental contains all of the required <i>Form Fields</i> .
Text Inputs	<ul style="list-style-type: none"> • <Incidental City> • <Incidental State> • <Incidental Country> • <Incidental Amount> • <Incidental Currency> • <Incidental Justification>
Expected Results	<p>If all of the required inputs are provided:</p> <ul style="list-style-type: none"> • it shall not be rejected and auditing shall continue <ul style="list-style-type: none"> ◦ Form 1 (after all of the inputs are filled in) <p>If any of the required inputs are missing:</p> <ul style="list-style-type: none"> • it shall be rejected and a status error shall be returned <ul style="list-style-type: none"> ◦ Form 1 (initially)
Dependencies	-
Initialization	1) Create a form that is filled with valid input, except leave a per diem incidental empty. For the incidental, fill in one of the <i>form fields</i> with valid input.
Test Steps	Repeat until the incidental expense no longer returns an error for missing <i>form fields</i> : <ul style="list-style-type: none"> • Provide valid input to an empty input in the corresponding incidental expense
Owner	Dylan Bettermann

3. Grants

3.A USER SPLITTING REIMBURSEMENT ACROSS MULTIPLE GRANTS

Comment [22]: Dylan Bettermann:
Not sure what to do with this one or 3.b

Description	Checks that reimbursement can be split if the <i>TRAP User</i> wishes to do so. More specifically, check that sponsored and non-sponsored grants are split correctly.
Text Inputs	-
Expected Results	If the reimbursements are successfully partitioned: <ul style="list-style-type: none">• Status ok If the reimbursements are not successfully partitioned: <ul style="list-style-type: none">• Status error and return the original, unpartitioned funds
Dependencies	-
Initialization	Create a valid form.
Test Steps	1) Split the reimbursements with the form. 2) Verify that non-sponsored expenses cannot be charged on the sponsored partition.
Owner	Dylan Bettermann

3.B "HOLD" FUNDS AFTER SUCCESSFUL AUDIT

Description	Checks that <i>TRAP</i> successfully marks funds as held after a successful <i>Form Submission</i> .
Text Inputs	<ul style="list-style-type: none">• <i>grant accounts</i>• <i>grantDB</i>• <i>grant funding partition</i>
Expected Results	If all grants have the required funds: <ul style="list-style-type: none">• Status ok If any grant does not have the required funds: <ul style="list-style-type: none">• Status error
Dependencies	-
Initialization	Create 2 forms with valid data.
Test Steps	1) Submit the first form. 2) Verify the amount of grant money left over after the money from the first form is marked 3) Submit the second form. 4) Verify the amount of grant money is different and also for the amount of form 2.
Owner	Dylan Bettermann

3.C GRANT RESTRICTED TRANSPORTATION PROVIDER

Description	Check to make sure that transportation restrictions are properly handled
Text Inputs	<i>grant accounts</i> <i>grantDB</i> <i>transportation carrier</i> for each <i>transportation expense type</i>
Expected Results	1) <i>status ok</i> 2) <i>status error</i>
Dependencies	4.d submit form
Initialization	Create 2 new valid forms. 1) set 1 grant specified to a grant that can fund transportation 2) make sure no grants specified can fund transportation
Test Steps	Submit the form(s) to TRAP for audit.
Owner	Brian Maurer

3.D GRANT APPROVER NAME

Description	Checks to make sure that TRAP returns a list of names associated with the grants for the approval process.
Text Inputs	
Expected Results	The form should output the names of those who need to approve the grants used.
Dependencies	4.d submit form
Initialization	Create a new valid form, make sure that the form uses 3 or more grants.
Test Steps	Submit the form(s) to TRAP for audit.
Owner	Brian Maurer

3.E ALCOHOL UNDER NON-SPONSORED GRANT

Description	Check to make sure that any purchased alcohol is under a non-sponsored grant.
Text Inputs	<ul style="list-style-type: none">• <Other Expense Justification>• <Grant Account>

Expected Results	1) <i>status ok</i> 2) <i>status error</i> 3) <i>status error</i> (no-critical, this requirement just didn't apply.)
Dependencies	–
Initialization	1) Create a new valid form. Add an alcohol related word to the <Other Expense Justification> field. Make sure the <Grant Account> is non-sponsored. 3) Create a new valid form. Add an alcohol related word to the <Other Expense Justification> field. Make sure the <Grant Account> is sponsored. 3) Create a new valid form. Do not add an alcohol related word to the <Other Expense Justification> field. Make sure the <Grant Account> is non-sponsored.
Test Steps	Submit the form(s) to TRAP for audit.
Owner	Brian Maurer

3.F GENERAL GRANT SPECIFIC RESTRICTIONS

Comment [23]: Brian Maurer: testable?

Description	Check Grant specific conditions
Text Inputs	–
Expected Results	Have a developer identify that the grant requirement was applied successfully.
Dependencies	This requirement is very dependant on the way grantDB is set up and will need to be restructured to match the <i>grantDB</i> once it is defined.
Initialization	Add a new grant specific restriction to TRAP. Create a valid form that needs to be checked and/or affected by the new restriction.
Test Steps	Submit the form(s) to TRAP for audit.
Owner	Brian Maurer

4. Form State Requirements

4.A GENERATE A LIST OF LOADABLE FORMS

Description	Check to see if we can load a list of saved forms.
Text Inputs	<i>user</i>
Expected Results	List of the 10 forms created during initialization.
Dependencies	4.e save form
Initialization	Create 10 forms under <i>user</i> . Populate them with data. Save all of them.
Test Steps	Load the list of forms for <i>user</i> .
Owner	Brian Maurer

4.B SAVED FORMS PERSIST WHILE TRAP IS RUNNING

Description	Check to make sure saved forms persist while TRAP is running.
Text Inputs	–
Expected Results	Form should be loaded.
Dependencies	4.c load form
Initialization	Create a new form, enter some inputs, save it. Close out of this form but keep TRAP running.
Test Steps	Wait 1 min (TRAP still running) try to load the form that was just saved.
Owner	Brian Maurer

4.C LOAD A FORM

Description	Check to see if we can load a form.
Text Inputs	1, 2) <i>form id</i>
Expected Results	If the form is loaded properly <ul style="list-style-type: none">Form data and description for the form under <i>form id</i> If the form is not loaded properly <ul style="list-style-type: none"><i>status error</i>
Dependencies	4.e save form
Initialization	1) Create a new valid form, Save it (<i>form id</i>). 2) Don't set up a loadable form, we want this one to fail.

Test Steps	1) Load the form with <i>form id</i> . 2) Load the form with <i>form id</i> (which doesn't exist).
Owner	Brian Maurer

4.D SUBMIT A FORM

Description	Check to see if we can actually submit a valid <i>reimbursement form</i> .
Text Inputs	–
Expected Results	A successful submission message with the necessary grant deductions.
Dependencies	4.d submit form
Initialization	Create a new form with all valid data.
Test Steps	Submit the form(s) to TRAP for audit. Check to see if the <i>reimbursement form</i> was saved in the correct spot in the database, check the grand deductions for accuracy.
Owner	Brian Maurer

4.E SAVE A FORM

Description	Verify that the save form feature works properly.
Text Inputs	1) <i>form id</i> (overwrites a previously existing form) 2) Description of new form (saves a new form) 3) –
Expected Results	On successful save <ul style="list-style-type: none"> • <i>Status ok</i> On failure to save <ul style="list-style-type: none"> • <i>Status error</i>
Dependencies	4.e save form
Initialization	Create 3 new forms with all valid inputs.
Test Steps	1, 2) Save the form. 3) Disconnect the database, and then save the form.
Owner	Brian Maurer

4.F REMOVE A FORM

Description	Check to see if a user can remove a form.
Text Inputs	–
Expected Results	On successful removal <ul style="list-style-type: none">• <i>Status ok</i> On failure to remove <ul style="list-style-type: none">• <i>Status error</i>
Dependencies	4.e save form
Initialization	1) Create a new valid form. Save it (get <i>form id</i>). 2) Create a new valid form. Save it (get <i>form id</i>).
Test Steps	1) Send a request to TRAP to remove the form (<i>form id</i>). 2) Disconnect the database, send a request to TRAP to remove the form (<i>form id</i>).
Owner	Brian Maurer

5. Post-Audit State

5.A AUDITED FORM STILL **LOADABLE**/SAVABLE

Comment [24]: Brian Maurer:
Confused as to how this requirement works.

Description	Check to see if we are able to load a form and save a form after audit..
Text Inputs	<i>form id</i>
Expected Results	If the form is saved properly <ul style="list-style-type: none">• <i>Status ok</i> If the form is loaded properly <ul style="list-style-type: none">• <i>Status ok</i> Otherwise <ul style="list-style-type: none">• <i>status error</i>
Dependencies	4.e save form, 4.d submit form, 4.c load form
Initialization	1) Create a new valid form, submit it for audit
Test Steps	1) Save the form 2) Load the form
Owner	Brian Maurer

5.B ERROR HANDLING

Description	Checks to see if errors are understandable by users.
Text Inputs	–
Expected Results	The user should be able to understand each error message that is output.
Dependencies	–
Initialization	–
Test Steps	Print out all possible error messages. Have a user read through each error message.
Owner	Brian Maurer

5.C TRAP OUTPUT

Description	Check to determine if TRAP generates output containing calculations based on the <i>audited form</i> .
Text Inputs	–

Expected Results	The developer and the user should both review the output to make sure that the output is readable and makes numerical sense.
Dependencies	4.d submit form
Initialization	Create a new form.
Test Steps	Submit the form for audit. Have a developer and a user review the output for calculations and output.
Owner	Brian Maurer

5.D USER FULL NAME FORMAT

Description	Checks to see if <i>TRAP</i> outputs the username in the correct standard format.
Text Inputs	<lastname> [name_suffix], <firstname> [middle]
Expected Results	1) Should audit successfully and return in <lastname> [name_suffix], <firstname> [middle] format 2) Should return in <lastname>, <firstname> format 3) Should return in <lastname> [name_suffix], <firstname> format 4) Should return in <lastname>, <firstname> [middle] format
Dependencies	4.d Submit form
Initialization	Create 4 new forms. Populate them with valid data. 1) Leave form one as all valid data 2) For form 2 leave [name_suffix] and [middle] empty. 3) For form 3 leave [name_suffix] empty. 4) For form 4 leave [middle] empty.
Test Steps	Submit all forms for audit.
Owner	Brian Maurer

5.E PRESENTATION

Description	Checks to ensure the proper fields are filled out when <Justification Presented> is set to "yes"
Text Inputs	<Justification Presented> <Justification Presentation Title> <Justification Presentation Abstract> <Justification Presentation Acknowledgement>
Expected Results	1) Should return an error 2) Should return an error 3) Should return an error 4) Should audit successfully

Dependencies	4.d Submit Form
Initialization	Create a 4 new new forms and populate them with valid data. <Justification Presented> must be set to "yes." in all of them. 1) In form 1 Leave <Justification Presentation Title> empty. 2) In form 2 Leave <Justification Presentation Abstract> empty. 3) In form 3 Leave <Justification Presentation Acknowledgement> empty. 4) in form 4 properly fill all <Justification Presentation ...> fields
Test Steps	Submit the 4 forms for audit.
Owner	Brian Maurer

5.F USERNAME

Description	Checks to see if a <username> is included in the TRAP output
Text Inputs	–
Expected Results	TRAP output should include <username>
Dependencies	4.d Submit Form
Initialization	Create a new form. Populate it with valid data.
Test Steps	Submit the form for audit.
Owner	Brian Maurer

5.G VISA STATUS

Description	Checks to see if <Visa Status> is included in the TRAP output
Text Inputs	–
Expected Results	TRAP output should include <visa status>
Dependencies	4.e Save Form
Initialization	Create a new form. Populate it with valid data.
Test Steps	Submit the form for audit.
Owner	Brian Maurer

6. Non-functional Requirements

6.A DATABASE TIMEOUTS

Description	This will check to make sure that <i>TRAP</i> waits for no longer than <i>database timeout</i> for a database response after an unexpected disconnect.
Text Inputs	–
Expected Results	1) <i>Status ok</i> 2) <i>Status error</i>
Dependencies	Database must be operational.
Initialization	Start the database, Start <i>TRAP</i>
Test Steps	1) Disconnect the database and then submit a database request. 2) Disconnect the database and then submit a database request. Keep the database disconnected beyond the <i>database timeout</i> .
Owner	Brian Maurer

6.B BUSINESS LOGIC MODIFICATIONS

Description	This will check to make sure that it takes no longer than 1 hour to add, modify, or remove <i>business logic</i> to the TRAP system. (If new logic this is not the time it takes to write the <i>module</i> that will be inserted, but the time it takes to insert the model in program.)
Text Inputs	–
Expected Results	Each Test Step must take less than 1 hour and they must work.
Dependencies	TRAP System must be fully operational.
Initialization	Write a new <i>module</i> that defines dates in which travel is not allowed and can then check to see if a given date is valid within those restrictions.
Test Steps	1) Add the new <i>module</i> to the <i>business logic</i> to the Trap system. (i.e. The <i>module</i> written above, which does not count toward the one hour time limit.) 2) Make a modification to the <i>business logic</i> . (i.e. change the order that requirements are checked in.) 3) Remove a requirement from the <i>business logic</i> (i.e. eliminate first and last day budget restrictions.)
Owner	Brian Maurer