Legal Informatics Worksheets Project

Small Business Taxes

The goal of the Worksheets project is to design, implement, and deploy a digital worksheet that embodies governmental regulations or regulations from some non-governmental institution. The course project leaves the application area open. In this note, we propose the topic of Employer’s Quarterly Federal Tax as an application domain. We believe that this application satisfies the following requirements for it to be a good course project.

1. Form 941 for filing Employer’s Federal Taxes is self-contained: it contains all the relevant data and it can collect that data from its user without undue and unnecessary burden.
2. The worksheet for Form 941 should correctly implement all regulations relevant to Employer’s Federal taxes. The regulations are numerous and non-trivial.
3. We believe that the use of Worksheets will make the task of preparing Employer’s Federal Taxes easier for the user. For example, the worksheet should perform a complicated calculation for the user or check the user’s inputs to avoid errors. There are several lines in this form that require additional calculations that are currently done outside. Such calculations can be supported much better if they were implemented using an inter-linked worksheet.

The course allows you to use whatever worksheet technology and implementation approach you may choose. Our purpose in this note is to provide an initial analysis of the problem, and a small worked out example to jumpstart your effort. To provide a worked example, we consider the related task of calculating Federal Un-Employment Taxes prepared using Form 940. This example will be illustrative of what you need to do for Federal Employment Taxes to be prepared using Form 941. In addition to producing an implemented worksheet, we will like you to carefully document your analysis and design process that you undertake before the implementation.

Implementing Form 940 and Instructions as a Worksheet

Form 940 has a preamble followed by clearly marked seven parts. The instructions for completing form 940 provide details for each of these sections.

The end-goal of your project is to create a complete worksheet to capture Form 940. You can do this by creating an initial version that replicates Form 940, followed by iterative refinements that make it much easier to complete, and that better incorporate the background tax law.

We will illustrate this process by taking Part II of Form 940 as an example shown below.
In the **first implementation** of the above form, lines 3, 4, and 5 are to be entered by the user, and lines 6, 7, and 8 are computed by the worksheet. The computations for lines 6, 7, and 8 are shown in the following instructions accompanying this form:

### 6. Subtotal
To figure your subtotal, add the amounts on lines 4 and 5 and enter the result on line 6.

| line 4 | + line 5 | = line 6 |

### 7. Total Taxable FUTA Wages
To figure your total taxable FUTA wages, subtract line 6 from line 3 and enter the result on line 7.

| line 3 | – line 6 | = line 7 |

### 8. FUTA Tax Before Adjustments
To figure your total FUTA tax before adjustments, multiply line 7 by 0.006 and then enter the result on line 8.

| line 7 | x 0.006 | = line 8 |

You can implement the worksheet the above computation using a worksheet as shown below: (This worksheet is available as: [http://worksheets.stanford.edu/homepage/view.php?folder=chaudhri&sheet=FUTA-WS-V1](http://worksheets.stanford.edu/homepage/view.php?folder=chaudhri&sheet=FUTA-WS-V1))

3. Total Payments to all employees
4. Payments exempt from FUTA Tax
   4a. Fringe Benefit
   4c. Retirement/Pension
   4e. Other
   4b. Group-term life insurance
   4d. Dependent care
5. Total of Payments made to each employee in excess of $7000
6. Subtotal (line 4 +line 5 = line 6)
7. Total taxable FUTA wages (line 3 - line 6 = line 7) See instructions
8. FUTA tax before adjustments (line 7 x 0.006 = line 8)

The above worksheet is controlled through the following rules:

viewvalue(subtotal6,X) :-
   value(paymentsExemptFromFUTA,X1) & value(paymentsExceeding7000,X2) & plus(X1,X2,X)
viewvalue(totalTaxableFUTAWages,X) :-
   value(totalPaymentsToAllEmployees,X1) & viewvalue(subtotal6,X2) & times(X2,-1,X3) &
   plus(X3,X1,X)
viewvalue(taxFUTABeforeAdjustments,X) :-
   viewvalue(totalTaxableFUTAWages,X1) & times(X1,0.006,X)
As a second refinement to the worksheet that we have created, we will provide a way for the user to enter individual components of payments to employees. Based on each of these components, we will provide the rules to compute the portions that are exempt from FUTA, and to automatically check the appropriate boxes 4a through 4e. Different components for payments made to all employees are explained in instructions for line 3 as shown below.

The detailed description of employee payments can be incorporated into second iteration of the worksheet shown below. In this version, the boxes 4a-4e can be checked automatically depending on the values entered by the user.
The above worksheet is controlled through the following rules:

\[
\text{viewvalue}(\text{subtotal6}, X) : -
\]
\[
\text{viewvalue}(\text{paymentsExemptFromFUTA}, X1) \& \text{value}(\text{paymentsExceeding7000}, X2) \& \text{plus}(X1, X2, X)
\]

\[
\text{viewvalue}(\text{totalTaxableFUTAWages}, X) : -
\]
\[
\text{viewvalue}(\text{totalPaymentsToAllEmployees}, X1) \& \text{viewvalue}(\text{subtotal6}, X2) \& \text{times}(X2, -1, X3) \& \& \text{plus}(X3, X1, X)
\]

\[
\text{viewvalue}(\text{taxFUTABeforeAdjustments}, X) : -
\]
\[
\text{viewvalue}(\text{totalTaxableFUTAWages}, X1) \& \text{times}(X1, 0.006, X)
\]

\[
\text{viewvalue}(\text{totalPaymentsToAllEmployees}, X) : -
\]
\[
\text{value}(\text{totalEmployeeCompensation}, X1) \& \text{value}(\text{totalEmployeeFringeBenefits}, X2) \& \text{value}(\text{totalEmployeeDependentCare}, X3) \& \text{value}(\text{totalEmployeeLifeInsurance}, X4) \& \text{value}(\text{totalEmployeeRetirement}, X5) \& \text{value}(\text{totalEmployeeOtherPayments}, X6) \& \text{plus}(X1, X2, X3, X4, X5, X6, X)
\]

\[
\text{viewholds}(\text{fringeBenefits}, \text{true}) : -
\]
\[
\text{value}(\text{totalEmployeeFringeBenefits}, X) \& \text{max}(X, 0, X)
\]

\[
\text{viewholds}(\text{dependentCare}, \text{true}) : -
\]
\[
\text{value}(\text{totalEmployeeDependentCare}, X) \& \text{max}(X, 0, X)
\]

\[
\text{viewholds}(\text{retirementPension}, \text{true}) : -
\]
\[
\text{value}(\text{totalEmployeeRetirement}, X) \& \text{max}(X, 0, X)
\]

\[
\text{viewholds}(\text{groupTermLifeInsurance}, \text{true}) : -
\]
\[
\text{value}(\text{totalEmployeeLifeInsurance}, X) \& \text{max}(X, 0, X)
\]

\[
\text{viewholds}(\text{other}, \text{true}) : -
\]
\[
\text{value}(\text{totalEmployeeOther}, X) \& \text{max}(X, 0, X)
\]

\[
\text{viewvalue}(\text{paymentsExemptFromFUTA}, X) : -
\]
\[
\text{value}(\text{totalEmployeeFringeBenefits}, X2) \& \text{value}(\text{totalEmployeeDependentCare}, X3) \& \text{value}(\text{totalEmployeeLifeInsurance}, X4) \& \text{value}(\text{totalEmployeeRetirement}, X5) \& \text{value}(\text{totalEmployeeOtherPayments}, X6) \& \text{plus}(X2, X3, X4, X5, X6, X)
\]
As the third refinement, we note that asking a user to enter payments such as *fringe benefits* is too high level. Answering this question requires sufficient knowledge about the income tax law. It is much better to guide the user through different expenses, and provide software support to choose which of the payments qualify as *fringe benefits*. This is explained in more detail in the instructions of Line 4.

The above instructions can be incorporated into the third version of the worksheet as shown below. Here, we have created a line item for each kind of fringe benefit. Adding such detail certainly provides much greater support to the user for preparing form 940.

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3. Total Payments to all employees: $5,750
   - Fringe Benefits: $1,150
     - Meals and lodging provided: $100
     - Contributions to accident or health plans for employees, including certain employer payments to a Health Savings Account or an Archer MSA: $200
     - Employer reimbursements (including payments to a third party) for qualified moving expenses, to the extent that these expenses would otherwise be deductible by the employee: $0
     - Payments for benefits excluded under section 125 (cafeteria) plans: $0
   - Dependent Care: $100
   - Life insurance: $0
   - Retirement: $2,000
   - Other: $0

4. Payments exempt from FUTA Tax: $3,750
   - 3a. Fringe Benefits: $1,150
   - 4a. Retirement/Pension: $1,150
   - 4b. Group-term life insurance: $150
   - 4d. Dependent care: $0

5. Total of Payments made to each employee in excess of $7,000: $5,000

6. Subtotal (line 4 + line 5 + line 6): $8,750

7. Total taxable FUTA wages (line 3 - line 6 - line 7): $49,000

8. FUTA tax before adjustments (line 7 x 0.066 = line 8): $320
The rules in the above worksheet are creating by extending the rules from the previous version by the following rule:

\[ \text{viewvalue}(\text{totalEmployeeFringeBenefits},X) \text{ :- value(mealsAndLodging},X1) \text{ & value(accidentPlans},X2) \text{ & value(healthPlans},X3) \text{ & value(healthSavingsAccount},X4) \text{ & value(archerMSA},X5) \text{ & value(qualifiedMovingExpenses},X6) \text{ & value(cafetariaPlan},X7) \text{ & plus}(X1,X2,X3,X4,X5,X6,X7,X) \]

Third refinement of the worksheet is available as:  

Summary

The process we have engaged above can be captured using the following steps:

1. Program the provided form in its original form. Write rules that capture the mathematical relationships between different cells.
2. Refer to the instructions for input for each sentence, and create sub worksheets for the following situations:
   a. Whenever the value to be entered in the form needs to be computed from a set of other values, create a sub-worksheet to perform that computation.
   b. Whenever determining the correct value requires applying some legal rules, create a sub-worksheet that asks the user appropriate questions to determine what value should be supplied.
3. Sub-worksheets should be created until the user merely needs to enter the values directly available, and the values can be entered based on only user’s knowledge of business, but no knowledge of tax law.

Your Project Goal

Your project goal is to follow the above process to create a complete worksheet and the associated sub-worksheets for Form 941 for preparing Small Business Taxes. Your deliverable will be a functioning implementation that can be tested by plugging in some test data. In addition, you will prepare a report like the one we did for Form 940, that captures the process you followed for converting the instructions into worksheet rules. Carefully document the reasons for creating or not creating a sub-worksheet in response to each instruction in the form.

Documents Provided

We are providing the following documents with this project description:

Form 940 and accompanying instructions

Form 941 and accompanying instructions