Analysis of Shanahan and Son's business systems

John Anthony Karvelis

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ANALYSIS OF SHANAHAN AND SON'S,

BUSINESS SYSTEMS

DIRECTOR: OR. LYLE DOMING

STUDENT: JOHN ANTHONY KARVELIS
Analysis of the Professional Benefits of My Honors Capstone

Director: Dr. Lyle Domina
Student: John Anthony Karvelis

5/7/86
I have undoubtably received many professional benefits from my project that I do not perceive, yet I cannot help but feel that every benefit is directly related to the realistic experience I received. My experience alone was my greatest professional benefit from analyzing Shanahan and Son's following four manual business systems: Payroll, Accounts Receivable, Accounts Payable, and General Ledger. In this paper I am attempting to throw more light upon what specific experiences I have benefitted from.

The first benefit and most obvious would be the reiteration of the analysis steps that I have previously learned in college. By being required to perform the analysis steps of the observing of the workplace, creating dataflow diagrams, writing the data dictionaries, developing the process specifications, and creating structured charts, I have been able to refresh my memory of the tasks involved in completing these steps and of their purposes or functions. As a result, when I enter the business world I should be more knowledgeable of the analysis phase than I would have been otherwise.

Another benefit and definitely the most important is that I performed these steps for an actual business as if I was an actual consultant. Therefore, not only did I refresh my memory of the steps, but I actually performed them. In the classroom, many of the analysis phase's steps cannot be truly simulated. Probably the task which was the hardest to create in the classroom is that of observation.
However, in my project I performed the observation task as I would under real conditions. I interviewed a secretary, a bookkeeper, and a supervisor all of which I did not know prior to the interview. As a result, I obtained actual experience in interviewing. From this particular experience I learned that employees will often contradict each other over how a business system actually runs. I found that by interviewing as many people as possible that are involved in a particular system and that by asking many detailed questions, one can usually determine how a system is actually carried out. Secondly, I learned that a person who works within a business system will describe its policies and procedures in ways that are understandable to him, but not necessarily understandable to an outsider. Consequently, I learned that an interviewer must be patient and polite in order to eventually receive a clear answer.

Also unlike my classes I was able to perform the analysis steps for the same business systems. This allowed me to see how the different steps were interrelated and how the structured chart would act as a bridge to the design stage. Although I was not able to begin the design stage I was able to perceive the interdependence of the steps within the analysis and design stages. This has helped me understand the necessity and effectiveness of structured analysis and design.
Lastly, the on the job experience has helped me to increase my confidence in myself and in my choice of careers. By performing this project I am more confident about my ability to be successful at similar assignments in the future. I now know more of what this type of project entails and I will now be more prepared in the future. I am also more confident in my choice of careers because I have accepted a position where I will be a programmer analyst and I will be performing analysis and design work. Because this project gave me a taste of what analysis and design are actually like and because I enjoyed this project tremendously, I am now enthusiastically looking forward to a satisfying career.

The majority of my professional benefits are a result of my on the job experience. No classroom can be as effective as the actual world. Through this project I have increased my knowledge of the analysis phase and even of the design phase. I now understand the concepts of structured analysis and design more thoroughly and I now know much more about the actual implementation of these steps. Above all else, this project has helped me to increase my confidence in performing analysis and design work.
Analysis of My Time Estimates for My Honors Capstone

Director: Dr. Lyle Domina

Student: John Anthony Karvelis

5/7/86
The business world revolves around deadlines in order to give employees guidance. Therefore, an employer must set time estimates for when projects are to be completed. These dates may be determined through fanciful formulas, but are usually attained through taking into consideration similar work experiences. One thing is for certain and that is that time estimates are necessary. During the course of my Honors Independent Study, I was required to make time estimates for the steps within my project. My project entailed the analysis of Shanahan and Son's, Builders, Inc.'s business systems. These manual systems are the Payroll, the Accounts Receivable, the Accounts Payable, and the General Ledger.

The following are the time estimates for my steps and the actual time spent on my steps for an allotted fifteen weeks.

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PROCESS SPECIFICATIONS

PAYROLL

ACCOUNTS RECEIVABLE

ACCOUNTS PAYABLE

GENERAL LEDGER
PAYROLL

DATAFLOW DIAGRAMS
The diagram illustrates the flow of information and processes related to payroll and tax management:

- **EMPLOYEE** provides EMPLOYEE-DAT and TIME-CARD information to PAYROLL.
- PAYROLL generates PAY-RATE and processes PAYROLL-TAX-REPORT for the GOVERNMENT.
- PAYROLL also generates PAYROLL-Account-NAME and valid INDIVIDUAL-SHEET for the GENERAL-LEDGER.
- PAYROLL communicates WITHHOLDING-RATES to the GOVERNMENT.
- PAYROLL provides VALID-EMPLOYEE-CHECK and processes W-2 for EMPLOYEE.

The diagram highlights the interconnections and data flows between the entities involved in payroll and tax management.
Diagram 4: Payroll

1. Format Check
2. Write Check
3. Format Individual Payroll Worksheet
4. Write Individual Payroll Worksheet

Flow:
- Format: Employee Check → Payroll Account Name
- Format: Individual Payroll Worksheet → Payroll Account Name
- Format: Individual Payroll Worksheet → Employee File
PAYROLL

PROCESS SPECIFICATIONS
1. ATTAIN EMPLOYEE-DATA.
   ATTAIN RATE.
   GET INDIVIDUAL-EMPLOYEE-FILE.
   PUT INDIVIDUAL-EMPLOYEE-FILE.

2. ATTAIN TIME-CARD.
   IF TIME-CARD IS VALID,
   THEN,
   VALID-TIME-CARD.
   OTHERWISE,
   INVALID-TIME-CARD.

3. ATTAIN VALID-TIME-CARD.
   ATTAIN WITHHOLDING-RATES.
   CALCULATE PAYMENT-AMOUNT.

4.1 ATTAIN PAYMENT-AMOUNT.
   ATTAIN INDIVIDUAL-EMPLOYEE-FILE.
   GET FORMATTED-EMPLOYEE-CHECK.

4.2 ATTAIN FORMATTED-EMPLOYEE-CHECK.
   PUT EMPLOYEE-CHECK.
4.3
ATTAIN PAYROLL-ACCOUNT-NAME.
ATTAIN PAYMENT-AMOUNT.
ATTAIN INDIVIDUAL-EMPLOYEE-FILE.
GET FORMATTED-INDIVIDUAL-PAYROLL-WORKSHEET.

4.4
FOR EACH FORMATTED-INDIVIDUAL-PAYROLL-WORKSHEET:
ATTAIN FORMATTED-INDIVIDUAL-PAYROLL-WORKSHEET.
PUT INDIVIDUAL-PAYROLL-WORKSHEET.

5.1
ATTAIN EMPLOYEE-CHECK.
FOR EACH EMPLOYEE-CHECK:
ADD EMPLOYEE-CHECK's AMOUNT PAID TO CHECK-TOTAL.

5.2
ATTAIN INDIVIDUAL-PAYROLL-WORKSHEET.
FOR EACH INDIVIDUAL-PAYROLL-WORKSHEET:
ADD INDIVIDUAL-PAYROLL-WORKSHEET AMOUNT PAID TO WORKSHEET-TOTAL.
5.3
ATTAIN WORKSHEET- TOTAL.
ATTAIN CHECK-TOTAL.
FOR EACH EMPLOYEE-CHECK AND INDIVIDUAL-PAYROLL-WORKSHEET,
ATTAIN EMPLOYEE-CHECK.
ATTAIN INDIVIDUAL-PAYROLL-WORKSHEET.

IF WORKSHEET-TOTAL EQUAL CHECK-TOTAL
THEN
FOR EACH EMPLOYEE-CHECK AND INDIVIDUAL-PAYROLL-WORKSHEET,
VALID- EMPLOYEE-CHECK.
VALID- INDIVIDUAL-PAYROLL-WORKSHEET.

OTHERWISE,

DETERMINE ERRONEOUS EMPLOYEE-CHECK OR
INDIVIDUAL-PAYROLL-WORKSHEET.

IF ERRONEOUS EMPLOYEE-CHECK OR
INDIVIDUAL-PAYROLL-WORKSHEET
THEN,

INVALID- EMPLOYEE-CHECK.
INVALID- INDIVIDUAL-PAYROLL-WORKSHEET.
6) ATTAIN CHECK-STUB.
   ACCESS CHECKING ACCOUNT.
   POST DEBITS TO ACCOUNT.
   POST NEW TOTAL.

7.1) ACCESS EMPLOYEE FILE.
     ACCESS PAYROLL Ledger.
     GET FORMATTED-W-2-FORM.

7.2) ATTAIN FORMATTED-W-2-FORM.
     PUT W-2-FORM.

7.3) ACCESS EMPLOYEE FILE.
     ACCESS PAYROLL Ledger.
     GET FORMATTED-PAYROLL-TAX-REPORTS.

7.4) ATTAIN FORMATTED-PAYROLL-TAX-REPORTS.
     PUT PAYROLL-TAX-REPORTS.
ACCOUNTS RECEIVABLE

DATAFLOW DIAGRAMS
ACCOUNT REVISION

DIAGRAM 1

1.1 CALCULATE SWORN STATEMENT

1.2 FORMAT SWORN STATEMENT

1.3 WRITE SWORN STATEMENT

1.4 COPY SWORN STATEMENT

1.5 VALIDATE SUB WAIVER

1.6 COPY VALID SUB WAIVER

VALID SUB WAIVER

JOB FILE

VALID SUB WAIVER

VALID SUB WAIVER

VALID SUB WAIVER

FORMATTED ORIGINAL SWORN STATEMENT

VALID SUB WAIVER COPY

VALID SUB WAIVER COPY

VALID SUB WAIVER COPY

SUCCESS STATEMENT COPY

SUCCESS STATEMENT COPY
3.1 Determine type of deposit

3.2 Write savings account deposit slip

3.3 Write checking account deposit slip

3.4 Write money market deposit slip

Deposit-slip

3.5 Copy deposit slip

Deposit-slip

Deposit-slip copy

Job file
ACCOUNTS RECEIVABLE

PROCESS SPECIFICATIONS
1.1  ATTAIN BUILDING-SPECIFICATIONS.
FOR EACH KIND-OF-WORK:
CALCULATE AMOUNT.

1.2.1  ATTAIN SWORN-STATEMENT-CALCULATIONS.
ATTAIN VALID-SUB-WAIVER-COPY.
COMPARE VALID-SUB-WAIVER TO CALCULATION.
IF SWORN-STATEMENT-CALCULATIONS COMPLETED,
THEN
FINAL-SWORN-STATEMENT.
OTHERWISE
TO-DATE-SWORN-STATEMENT.

1.2.2  ATTAIN TO-DATE-SWORN-STATEMENT.
GET FORMATTED-ORIGINAL-SWORN-STATEMENT.

1.2.3  ATTAIN FINAL-SWORN-STATEMENT.
GET FORMATTED-ORIGINAL-SWORN-STATEMENT.

1.3  ATTAIN FORMATTED-ORIGINAL-SWORN-STATEMENT.
PUT ORIGINAL-SWORN-STATEMENT.
1.4 ATTAIN ORIGINAL-SWORN STATEMENT COPY
PUT SWORN STATEMENT-COPY.

1.5 ATTAIN SUB-WAIVER.
ATTAIN SWORN STATEMENT-COPY.
IF SUB-WAIVER EQUAL-DETAIL-LIKE:
THEN
VALID-SUB-WAIVER.
OTHERWISE,
INVALID-SUB-WAIVER.

1.6 ATTAIN VALID-SUB-WAIVER.
COPY VALID-SUB-WAIVER.
PUT VALID-SUB-WAIVER-COPY.
ATTAIN CONSTRUCTION-PAYMENT.
ATTAIN PAID-SUB-WAIVER.
ATTAIN SUREN-STATEMENT-COPY.
IF CONSTRUCTION-PAYMENT EQUAL SUREN-STATEMENT-COPY,
THEN
VALID S-AND-S-PAYMENT.
FOR EACH PAID-SUB-WAIVER:
VALID PAID-SUB-WAIVER.

OTHERWISE,

INVALID S-AND-S-PAYMENT.
FOR EACH PAID-SUB-WAIVER:
INVALID PAID-SUB-WAIVER.

3.1. ATTAIN S-AND-S-PAYMENT.
FOR EACH S-AND-S-PAYMENT,
COMPARE S-AND-S-PAYMENT TO TYPE:
CASE 1 (SAVINGS ACCOUNT OPPOSITE):

3.2. PUT SAVINGS-ACCOUNT DEPOSIT-SLIP.

CASE 2 (CHECKING ACCOUNT OPPOSITE):

3.3. PUT CHECKING-ACCOUNT DEPOSIT-SLIP.

CASE 3 (MONEY-MARKET DEPOSIT SLIP):

3.4. PUT MONEY-MARKET-DEPOSIT-SLIP.
3.5  ATTAIN ORIGINAL-DEPOSIT-SLIP.
      COPY ORIGINAL-DEPOSIT-SLIP.
      PUT DEPOSIT-SLIP-COPY.

4  ATTAIN 5-AND-S-DEPOSIT.
    ATTAIN ORIGINAL-DEPOSIT-SLIP.
    MAKE DEPOSIT.

5  ATTAIN BANK-RECEIPT.
    ATTAIN ACCOUNTS-RECEIVABLE-ACCOUNT-NAME.
    ATTAIN DEPOSIT-SLIP-COPY.
    GET FORMATTED-ACCOUNTS-RECEIVABLE-WORKSHEET.

6  ATTAIN FORMATTED-ACCOUNTS-RECEIVABLE-WORKSHEET.
    PUT ACCOUNTS RECEIVABLE-WORKSHEET.
ACCOUNTS PAYABLE

DATAFLOW DIAGRAMS
ACCOUNTS PAYABLE

PERIODIC BILL

2.1. SPECIFY TYPE

INSURANCE BILL

2.2. MARK 10 DAYS BEFORE DUE DATE

NON-INSURANCE BILL

2.3. MARK 5 DAYS BEFORE DUE DATE

CALENDAR
ACCOUNTS PAYABLE

PROCESS SPECIFICATIONS
\textbf{ATTAIN VENDOR-BILL.}
\textbf{IF} VENDOR-BILL \textbf{SPECIFIC TO JOE},
\textbf{THEN},
\textbf{JOB-RELATED-BILL}.
\textbf{OTHERWISE},
\textbf{PERIODIC-BILL}.

\textbf{ATTAIN PERIODIC-BILL.}
\textbf{IF} INSURANCE-BILL,
\textbf{THEN},
\textbf{INSURANCE-BILL}.
\textbf{OTHERWISE},
\textbf{NON-INSURANCE}.

\textbf{ATTAIN INSURANCE-BILL.}
\textbf{PUT BILL-NAME ON CALENDAR}
\textbf{10 DAYS BEFORE DUE DATE.}
ATTAIN NON-INSURANCE BILL.
PUT BILL-NAME ON CALENDAR 5 DAYS BEFORE DUE-DATE.

ATTAIN PERIODIC BILL.
PUT PERIODIC BILL IN ACCOUNTS PAYABLE FILE.

ATTAIN CALENDAR.
IF BILL-NAME WRITTEN ON CURRENT DATE,
THEN,
ATTAIN PERIODIC BILL FROM ACCOUNTS PAYABLE FILE.
5.1 A\-\~A\-\~A ~ Job-Related-Bill and One-Period-Bill. If Job-Related-Bill or One-Period-Bill has no Remittance, then Bill-with-No-Remittance. Otherwise, Bill-with-Remittance.


5.4
ATTAIN VALID-PAY-OFF-WAIVER AND
(BILL-COPY OR BILL-REMITTANCE).
Get FORMATTED-CHECK.

5.5
ATTAIN FORMATTED-CHECK AND
A VALID-PAY-OFF-WAIVER
(BILL-COPY OR BILL-REMITTANCE).
Put BILL-PAYMENT.

5.6
ATTAIN CHECK-STUB.
Access CHECKING ACCOUNT.
Debit CHECKING ACCOUNT FOR CHECK-STUB-AMOUNT.

Accounts Payable
6. ATTAIN CHECK-STUB AND ACCOUNTS-PAYABLE-ACCOUNT-NAME.
    GET FORMATTED-ACCOUNTS-PAYABLE-WORKSHEET.

7. ATTAIN FORMATTED-ACCOUNTS-PAYABLE-WORKSHEET
    PUT PAYMENT-DESCRIPTION.
    PUT CHECK-NUMBER.
    PUT AMOUNT-PAID.
    PUT PAYEE-NAME.
GENERAL LEDGER

DATA FLOW DIAGRAMS
GENERAL LEDGER OVERVIEW

1. BUILD PAYROLL LEDGER

2. BUILD PAYABLE LEDGER

3. BUILD RECEIVABLE LEDGER

4. PRODUCE FINANCIAL STATEMENTS

BALANCE SHEET
INCOME STATEMENT
G&A EXPENSES

ACCOUNTS PAYABLE WORKSHEET
ACCOUNTS PAYABLE LEDGER
ACCOUNTS RECEIVABLE WORKSHEET
ACCOUNTS RECEIVABLE LEDGER

PAYROLL WORKSHEET
PAYROLL LEDGER
GENERAL LEADER

PROCESS SPECIFICATIONS
1. ATTAIN VALID INDIVIDUAL PAYROLL WORKSHEET.
   FOR EACH VALID INDIVIDUAL PAYROLL WORKSHEET:
   ACCESS PAYROLL LEDGER.
   POST DEBITS AND CREDITS TO PAYROLL LEDGER ACCOUNT.

2. ATTAIN ACCOUNTS PAYABLE WORKSHEET.
   FOR EACH ACCOUNTS PAYABLE WORKSHEET:
   ACCESS ACCOUNTS PAYABLE LEDGER.
   POST DEBITS AND CREDITS TO ACCOUNTS PAYABLE LEDGER.

3. ATTAIN ACCOUNTS RECEIVABLE WORKSHEET.
   FOR EACH ACCOUNTS RECEIVABLE WORKSHEET:
   ACCESS ACCOUNTS RECEIVABLE LEDGER.
   POST DEBITS AND CREDITS TO ACCOUNTS RECEIVABLE LEDGER.

4.1. ACCESS PAYROLL LEDGER.
    ACCESS ACCOUNTS RECEIVABLE LEDGER.
    ACCESS ACCOUNTS PAYABLE LEDGER.
    FOR EACH BALANCE-SHEET CATEGORY:
    GET AMOUNT.
    GET FORMATTED BALANCE-SHEET.
4.2
ATTAIN FORMATTED BALANCE-SHEET.
FOR EACH BALANCE-SHEET CATEGORY:
PUT AMOUNT.
PUT BALANCE-SHEET.

4.3
ACCESS PAYROLL LEDGER.
ACCESS ACCOUNTS PAYROLL LEDGER.
ACCESS ACCOUNTS RECEIVABLE LEDGER.
FOR EACH INCOME-STATEMENT CATEGORY:
GET AMOUNT.
GET FORMATTED-INCOME-STATEMENT.

4.4
ATTAIN FORMATTED-INCOME-STATEMENT.
FOR EACH INCOME-STATEMENT AMOUNT:
PUT AMOUNT.
PUT INCOME-STATEMENT.

4.5
ACCESS PAYROLL LEDGER.
ACCESS ACCOUNTS PAYROLL LEDGER.
ACCESS ACCOUNTS RECEIVABLE LEDGER.
FOR EACH G-AND-A-EXPENSES CATEGORY:
GET AMOUNT.
GET FORMATTED-G-AND-A-EXPENSES.

ATTAIN FORMATTED-G-AND-A-EXPENSES.
FOR EACH G-AND-A-EXPENSES CATEGORY:
PUT AMOUNT.
PUT G-AND-A-EXPENSES.
DATA DICTIONARY
DATA ELEMENT NAME: ACCOUNTS-PAYABLE-ACCOUNT-NAME

ALIASES: BILL-NAME

VALUES & MEANING:

A thru Z

NOTES: ACCOUNTS-PAYABLE-ACCOUNT-NAME consist of the name of the creditor.
FILE NAME: ACCOUNTS-PAYABLE-FILE

ALIASES:

COMPOSITION:

(FAIL-NAME) + PAYEE-NAME +
* AMOUNT-DUE + DATE-DUE +
\PAYMENT-DESCRIPTION\
FILE NAME: ACCOUNTS PAYABLE LEDGER

ALIASES:

COMPOSITION: AMOUNT-PAID + CHECK-NUMBER + PAYEE-NAME + PAYMENT-DESCRIPTION

NOTES: Amount totals of each account
DATAFLOW NAME: ACCOUNTS-PAYABLE-WORKSHEET

PHASES: ACCOUNTS-PAYABLE-LEDGER

COMPOSITION:

NOTES: Account totals for a week
DATA ELEMENT NAME: Accounts-Receivable-Account-Name

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: Debtors Name
FILE NAME: ACCOUNTS RECEIVABLE LEDGER

CASES:

COMPOSITION: ACCOUNTS RECEIVABLE-ACCOUNT-NAME + PAYMENT-DESCRIPTION + AMOUNT-PAID + DATE-ISSUED

NOTES: Annual totals of accounts
DATAFLOW NAMES: ACCOUNTS RECEIVABLE WORKSHEET

ALIASES: ACCOUNTS RECEIVABLE LEDGER

COMPOSITION

NOTES: Weekly totals of accounts
DATASET NAME: AMOUNT

ALIASES:

VALUES & MEANINGS:

$ = dollar
0 = $0
00 = $0.00

NOTES: Dollar Amount of each particular category includes on business forms.
DATA ELEMENT NAME: AMOUNT-PAID

VALUES & MEANINGS:

$  dollar

0 - 9

NOTES: PERTAINS TO AMOUNT OF CHECK PAYMENT OR CASH PAYMENT
FILE NAME: BALANCE-SHEET

ALIASES:

COMPOSITION: CATEGORY-DESCRIPTION + AMOUNT

NOTES:
DATAFLOW NAME: BANK-RECEIPT

ALIASES: DEPOSIT-SLIP

COMPOSITION:

NOTES:
DATAFLOW NAME: BILL-COPY

ALIASES: JOB-RELATED BILL, PERIODIC BILL, BILL-WITH-NO-REMITTANCE, DUE-PERIODIC BILL, VENDOR-BILL, BILL-WITH-REMITTANCE, BILL-WITH-REMITTANCE

COMPOSITION: PAYEE-NAME + AMOUNT-DUE + DUE-DATE + SUM OF DETAIL LINE

NOTES: None
DATA ELEMENT NAME: BILL-NAME

ALIASES: PAYEE-NAME

VALUES & MEANINGS:

A = not Z

NOTES: BILL NAME CONSISTS OF CREDITOR'S NAME OR PAYEE'S NAME.
DATAFLOW NAME: BILL-PAYMENT

ALIASES:

COMPOSITION: AMOUNT PAID + PAYEE NAME + CURRENT DATE
PAYER NAME + PAYMENT DESCRIPTION

NOTE:


DATAFLOW NAME: BILL-REMITTANCE

PLEASE: BILL-COPY, VENDOR-BILL, BILL WITH REMITTANCE, BILL WITH NO REMITTANCE, JOB-RELATED BILL, PERIODIC BILL

COMPOSITION:

NOTES:
DATAFLOW NAMES  BUILDING-SPECIFICATIONS

ALIASES:

COMPOSITION  KIND-OF-WORK?

CONSISTS OF CONSTRUCTION DETAILS
FILE NAME: CALENDAR

ALL CASES:

COMPOSITION:

DATES

NOTES:
DATA ELEMENT NAME: CATEGORY-DESCRIPTION

ALIASES:

VALUES & MEANINGS:

# dollar
0-9
A-thru Z

NOTES: Detail of what Amounts signify on Financial Statements
FIVE NAME: CHECKING ACCOUNT

ALIASES:

COMPOSITION:

\[
(\text{CHECK-NUMBER} + \text{PAYMENT-DESCRIPTION} + \text{DEBET} + \text{CREDIT} + (\text{DATE-ISSUED}) + \text{BALANCE})
\]

NOTES:
DATAFLOW NAME: CHECK-STUB
ALIASES: BILL-PAYMENT

COMPOSITION:

NOTES:
DATA ELEMENT NAME:  CHECK-STUB-AMOUNT

ALIASES:  AMOUNT, PID

VALUES & MEANINGS:

NOTES:
DATA ELEMENT NAME: CHECK-TOTAL

VALUES & MEANINGS:

0-9

NOTES: TOTAL AMOUNT OF ALL OF THE EMPLOYEE-CHKS...
DATAFLOW NAME: CONSTRUCTION-PAYMENT

ALIASES: BILL-PAYMENT

COMPOSITION:

NOTES: RECEIVED BY SHALANAI & SONS FROM OWNER
DATA ELEMENT NAME: CURRENT-DATE

ALIASES:

VALUES & MEANINGS:

A + thru 2
0 + thru 9

NOTES:
DATA ELEMENT: DATE-ISSUED

ALIASES:

VALUES & MEANINGS:

0 - 9

NOTES: DATE-ISSUED PERTAINS TO DATE THE CHECK WAS ISSUED.
DATAFLOW NAME: DEPOSIT-SLIP

ALIASES:

COMPOSITION:
DEPOSITOR-NAME + TYPE-OF-DEPOSIT + CURRENT-DATE + AMOUNT + FINANCIAL- INSTITUTION-NAME

NOTES:
DATAFLOW NAME: DEPOSIT SLIP COPY

ALIASES: DEPOSIT-SLIP

COMPOSITION:

NOTES:
CAY ELEMENT NAME: DEF: TOR-NAME

ALIASES: PATR-NAME

VALUE & MEANINGS:

NOTES:
DATAFLOW NAME: OAT PERIODIC BILL

ALIASES: BILL-COPY BILL-REMITTANCE BILL-WITH-NO-
REMITTANCE JOB-RELATED BILL PERIODIC BILL
VENOOR-BILL

COMPOSITION:

NOTES:
DATAFLOW NAME: EMPLOYEE-CHECK

ALIASES:

COMPOSITION: AMOUNT-PAID + PAYEE-NAME + CURRENT DATE + PAYER-NAME + PAYMENT-DESCRIPTION

NOTES:
DATA FLOW NAME: EMPLOYEE-DATA

ACTASSES:

COMPOSITION: EMPLOYEE-NAME + EMPLOYEE-EDUCATION + PAST-EXPERIENCE + EMPLOYEE-REFERENCES

NOTES:
DATA ELEMENT NAME: EMPLOYEE-EDUCATION

ALIASES:

VALUES & MEANINGS:

A thru Z
0-9

NOTES:
FILE NAME: EMPLOYEE-FILES

ALIASES:

COMPOSITION:

INDIVIDUAL-EMPLOYEE-FILE

NOTES: STORED ALPHABETICALLY IN FILE CABINET
DATA ELEMENT NAME: EMPLOYEE-NAME

ALIASES:

VALUES & MEANINGS:

\[ A + B = C \]

NOTES:
DATA ELEMENT NAME: EMPLOYEE-REFERENCES

ALIASES:

VALUES & MEANINGS:

A thru Z
0 thru 9
DATA ELEMENT NAME: FEDERAL-TAX

ALIASES:

VALUES & MEANINGS:

$    dollar

0-9

NOTE: DOLLAR AMOUNT NOT RATE
DATA ELEMENT NAMES: FEDERAL TAXES

ALIASES:

VALUES & MEANINGS:

O-9

NOTES: FORMS WORKING, RATE
DATA ELEMENT NAME: F.I.C.A.

ALIASES:

VALUES & MEANINGS:

$   dollar

0-9

NOTES: Social Security withholding AMOUNT for FICA.
DATA ELEMENT NAME: PICA - TAXES

ALIASES: 

VALUES & MEANING:

0-9

NOTES: SOCIAL SECURITY WITNESSES. PIA-
DATAFLOW NAME: FINAL SWORN STATEMENT

COMPOSITION:

NOTES:
DATA ELEMENT NAME: FINANCIAL-INSTITUTION-NAME

ALIASES:

VALUES & MEANINGS:

\[ A = \text{bank or savings & loan} \]

NOTES: Bank or savings & loan.
DATAFLOW NAME: FORMATTED-ACCOUNTS-RECEIVABLE-WORKSHEET

ALIASES: ACCOUNTS-RECEIVABLE-WORKSHEET

COMPOSITION:

NOTES:
DATAFLOW NAME: FORMATTED-BALANCE-SHEET

ALIAS: BALANCE-SHEET

COMPOSITION:

NOTES:
DATAFLOW NAME: FORMATTED-CHECK
ALIASES: BILL-PAYMENT

COMPOSITION:

NOTES:
DATAFLOW NAME: FORMATTED- C-AND-A-EXPENSES

ALIASES: C-AND-A-EXPENSES

COMPOSITION:

NOTES:
DATAFLOW NAME: FORMATTED-INCOME-STATEMENT

ALIASES: INCOME-STATEMENT

COMPOSITION:

NOTES:
DATA ELEMENT NAME: \( \text{PAYROLL-TAX-REPORTS} \)

COMPOSITION:

\[ \text{EMPLOYEE-NAME} \oplus \text{PAYROLL-TAX-INFORMATION} \]

NOTES:
DATAFLOW NAME: FORMATTED-W-2-FORM

ALIASES:

COMPOSITION: EMPLOYEE-NAME + W-2-INFORMATION

NOTE:

•

•
DATAFLOW NAMES: FORMATTED - INDIVIDUAL - PAYROLL - WORKSHEET

ALIASES:

COMPOSITION:
- PAYROLL-ACCOUNT-NAME + PAYMENT-RATE +
- HOURS + REGULAR-PAY + OVERTIME-PAY +
- F.I.C.A. + FEDERAL-TAX + STATE-TAX +
- LOANS + NET-PAY + CHECK-NUMBER

NOTES:
DATA ELEMENT NAME: HOURS

ALIASES:

VALUES & MEANINGS:

0-9

NOTES: Hours Worked
FILE NAME: INCOME-STATEMENT

ALIASES:

COMPOSITION: CATEGORY-DESCRIPTION + AMOUNT

NOTES:
DATA FLOW NAME: INDIVIDUAL-EMPLOYEE-FILE

ALIASES:

COMPOSITIONS: EMPLOYEE-DATA + PAYMENT-RATE

NOTES:
DATAFLOW NAME: INDIVIDUAL-PAYROLL-WORKSHEET

ALIASES:

COMPOSITION:
PAYROLL-ACCOUNT-NAME + PAYMENT-RATE + HOURS + REGULAR-PAY + OVERTIME-PAY + F.I.C.A + FEDERAL-TAX + STATE-TAX + LOANS + NET-PAY + CHECK-NUMBER

NOTES:
DATAFLOW NAME: INSURANCE-BILL

ALIASES: BILL-COPY JOB-RELATED-BILL NON-INSURANCE-BILL
PERIODIC-BILL BILL-WITH-NO-REMITTANCE
ONE-PERIODIC-BILL VENDOR-BILL BILL-REMITTANCE
BILL-WITH-REMITTANCE

COMPOSITION:

NOTES:
DATAFLOW NAME: INVALID EMPLOYEE CHECK

ALIASES:

COMPOSITION:

AMOUNT-PAID + PAYEE-NAME + CURRENT-DATE =
PAYEE-NAME + PAYMENT-DESCRIPTION

NOTES: PROVEN ERRONEOUS
DATA-LOW NAME:  INVALID- INDIVIDUAL- PATROLL- WORKSHEET

COMPOSITION:

NOTES: PROVEN- ERRONEOUS
DATAFLOW NAMES: INVALID-SUB-WAIVER

ALIASES: VALID-SUB-WAIVER

COMPOSITION:

NOTES:
DATAFLOW NAME: INVALID-TIME-CARD

ALIASES:

COMPOSITION: EMPLOYEE-NAME + 5 HOURS + WORK-DESCRIPTION

NOTES: ERRONEOUS CARD
DATAFLOW NAME: JOB-RELATED-BILL

ALIASES: BILL-COPY BILL-REMITTANCE BILL-WITH-REMITTANCE BILL-WITH-NO-REMITTANCE PERIODIC-BILL VENDOR-BILL ONE-PERIODIC-BILL

COMPOSITION:

NOTES:
DATA ELEMENT NAME:  KING-OF-WORK

ALIASES:

VALUES & MEANINGS:

A thru Z
0 - 9

NOTES:  DETAILED DESCRIPTION OF WORK REQUESTED BY OWNER
DATA ELEMENT NAME: LOANS

ALIASES:

VALUES & MEANINGS:

$ dollar

0-9

NOTES: LOANS ARE Deductible From Payments
DATA ELEMENT NAME: NET-PAY

ALIASES:

VALUES & MEANINGS:

$ dollar

0-9

NOTES: PAYMENT FOR ONE PAYMENT
DATAFLOW NAME: NON-INSURANCE-BILL

ALIASES: BILL-COPY

COMPOSITION:

NOTES:
DATAFLOW NAME: PAID-SUB-WAIVER

ALIASES: VALID-PAID-SUB-WAIVER

COMPOSITION:

NOTES:
DATA ELEMENT NAME: PAST-EXPERIENCE

ALIASES:

VALUES & MEANINGS:

A thru Z
0-9

NOTES:
DATAFLOW NAME: PAY-RATE

ALIASES:

COMPOSITION: EMPLOYEE-NAME + PAYMENT RATE

NOTES:
DATA ELEMENT NAME: NAME OF CREDITOR

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: NAME OF CREDITOR
DATA ELEMENT NAME: PATER-NAME

ALIASES:

VALUES & MEANINGS:

SHANAHAN & SONS, BUILDERS INC.

NOTES: ENFORCEMENT FOR CHECKS
DATA ELEMENT NAME:  PAYMENT-AMOUNT

ALIASES:

VALUES & MEANINGS:

0 - 9

NOTES: AMOUNT EMPLOYEE WILL ACTUALLY RECEIVE FOR COMPLETED WORK
DATA ELEMENT NAME: PAYMENT-DESCRIPTION

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: DESCRIBES GENERAL DETAILS OF BILL
DATA ELEMENT NAME: PAYMENT RATE

ALIASES:

VALUES & MEANINGS:

$ dollar

0-9

OPTIONS

A) Hourly

B) Salary (Supervisors)

NOTES:
DATA ELEMENT NAME: PAYROLL-ACCOUNT-NAME

SYNONYMS: EMPLOYEE-NAME

VALUES & MEANINGS:

A thru Z

NOTES: NAME OF EMPLOYEE
DATAFLOW NAME: PAYROLL LEDGER

ALIASES:

COMPOSITION:

PAYROLL-ACCOUNT-NAME + RATE + OAS +
REGULAR-PAT + OVERTIME-PAT + WAGES TOTAL +
F.I.C.A. + FEDERAL-TAX + STATE-TAX +
LOANS + NET-PAY + CHECK-NUMBER

NOTES: Maintains annual totals for accounts
DATA ELEMENT NAME: PAYROLL-TAX-INFORMATION

QUOTES:

VALUES & MEANINGS:

A thru Z
0-9

NOTES:
DATAFLOW NAME: PAYROLL-TAX-REPORTS

ALIASES:

COMPOSITION: EMPLOYEE-NAME + PAYROLL-TAX-INFORMATION

NOTES:
DATAFLOW NAMES PERIODIC-BILL

ALIASES: BILL-COPY BILL-REMITTANCE BILL-WITH-REMITTANCE BILL-WITH-NO-REMITTANCE JOB-RELATED-BILL VENDOR-BILL DUE-PERIODIC-BILL

COMPOSITION:

NOTES:
DATA ELEMENT NAME: PREVIOUS PAYMENTS

VALUES & MEANINGS:

$0.00

NOTES: Amount paid in the past
DATA ELEMENT NAME: PROJECT-NAME

VALUES & MEANINGS:

A throug

NOTES: PROJECT-NAME IS USUALLY THE NAME OF THE OWNER OR HIS BUSINESS
DATA ELEMENT NAME: REGULAR-PAY

ALIASES:

VALUES & MEANINGS:

0 - 9

dollar

NOTES:
DATAFILE NAME: 5-AND-5-DEPOSIT

SALARY: 1.3 - PAYMENT

COMPOSITION:

NOTES: THIS SAVINGS RECEIVED FROM THE JEW.
CERTAINS TO SAVAHAN & SONS WORK COMPLETED.
DATA ELEMENT NAME: STATE-TAX

ALIASES:

VALUES & MEANINGS:

$ dollar

C-Q

NOTES: ANNUAL NOT RATE
DATAFLOW NAME: ORIGIN-2 WORK STATEMENT

ALIASES:

COMPOSITION: "builder-name + kind-of-work + amount"
DATA ELEMENT NAME: OVERTIME-PAY

VALUES & MEANINGS:

$  dollar

O - 0

NOTES:
DATA ELEMENT NAME: OWNER'S NAME

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: Our who contracted building to be built.
DATA ELEMENT NAME: STATE-TAXES

VALUES & MEANINGS:

0-9

NOTES: STATE WITHOLDING RATE
DATA ELEMENT NAME: SUB-NAME

VALUES & MEANINGS:

$A \quad $ thru $Z$

NOTES: SUB-CONTRACTOR'S NAME
NAME: SUB-PAYMENT
ALIASES: BILL-PAYMENT

COMPOSITION: PAYEE-NAME + PAYER-NAME + PAYMENT-DESCRIPTION + AMOUNT-PAID + CURRENT-DATE

NOTES:
DATA FLOW NAME: SUB-WAIVER

ALIASES: VALZO-SUB-WAIVER

COMPOSITION:

NOTES:
DATAFLOW NAME: SWORN-STATEMENT-CALCULATIONS

LIAISES:

COMPOSITION: ∑ KIND-OF-WORK × AMOUNT

NOTES:
DATAFLOW NAME: TIME-CARD

IASES:

COMPOSITION: EMPLOYEE-NAME + 5 HOURS + WORK-DESCRIPTION

NOTES:
DATA ELEMENT NAME: TYPE-OF-DEPOSIT

ALIASES:

VALUES & MEANINGS:

1) SAVINGS ACCOUNT

2) CHECKING ACCOUNT

3) MONEY MARKET

NOTES:
DATAFLOW NAME: VALID-EMPLOYEE-CHECK

ALIASES:

COMPOSITION: AMOUNT-PAID + PAYEE-NAME + CURRENT-DATE + PAYER-NAME + PAYMENT-DESCRIPTION

NOTES: PROVEN TO BE CORRECT
file name: valid-individual-payroll-worksheet

aliases: payroll-ledger

composition:

notes: maintains totals for each account for one payment period
DATAFLOW NAME: PAID-IN-PAIDOUT

ALIASES:

COMPOSITION:  
- OWNER-NAME
- NAME=PAIDOUT
- AMOUNT=PAID
- DUE=DATE
- PAID=PAIDOUT

NOTES:
DATAFLOW NAME: VALID-S-AND-C-PAYMENT

ALIASES: BILL-PAYMENT

COMPOSITION:

NOTES: THIS PAYMENT CERTAINLY IS NOT DONE DIRECTLY BY SCARLETT AND SON'S
DATAFLOW NAMES: VALIO-SUB-WAIVER

ALIASES:

COMPOSITION:  

OWNER-NAME + SUB-NAME +  
AMOUNT-DUE + DUE-DATE + PREVIOUS-PAYMENT

NOTES:
DATAFLOW NAMES VALID-SUB-WAIVER-COPY

IASES: VALID-SUB-WAIVER

NOTES:
DATAFLOW  NAME:  VALID-TIME-CARD

ALIASES:

COMPOSITION:  EMPLOYEE-NAME + \( \frac{1}{2} \) HOURS + WORK-DESCRIPTION

NOTES:  CORRECT CARD
DATAFLOW NAME: VENDOR-BILL

ALIASES:
BILL-COPY  BILL-REMITTANCE
BILL-WITH-REMITTANCE  BILL-WITH-NO-REMITTANCE
JOB-RELATED-BILL  PERIODIC-BILL
ONE-PERIODIC-BILL

COMPOSITION:

NOTES:
DATAFLOW NAME: W-Z-FORM

ALIASES:

COMPOSITION: EMPLOYEE-NAME + W-Z-INFORMATION

NOTES,
DATA ELEMENT NAME: W-2-INFORMATION

ALIASES:

PLACES & MEANINGS:

A thru Z
0-9

NOTES:
DATA ELEMENT NAME: WAGES-TOTAL

ALIASES:

VALUES & MEANINGS:

$\ 0 \quad \text{or} \quad 0-9$

NOTES: Total for one payment period without deductions.
DATAFLOW NAMES: WITHOLDING-RATES

ALIASES:

COMPOSITION:
FEDERAL-TAXES + STATE-TAXES + F.I.C.A.-TAXES.
DATA ELEMENT NAME: WORK-DESCRIPTION

ALIASES:

VALUES & MEANINGS:

A thru Z
0-9

NOTES:
DATA ELEMENT NAME: WORKSHEET-TOTAL

VALUES & MEANING:

0 - Q

NOTES: TOTAL AMOUNT OF NET-PAY FOR ALL OF THE INDIVIDUAL-PAYROLL-WORKSHEETS
STRUCTURED CHARTS
PAYROLL

STRUCTURED CHART
PUT TAX REPORTS

INDIVIDUAL EMPLOYEE FILE

EOF

GET INDIVIDUAL EMPLOYEE FILE

GET PAYROLL DATA

FORMAT W-2 FORM

WRITE W-2 FORM

FORMAT PAYROLL TAX REPORTS

WRITE PAYROLL TAX REPORTS

FORMATTED PAYROLL WORKSHEET

FORMATTED W-2 FORM

INDIVIDUAL PAYROLL WORKSHEET

INDIVIDUAL EMPLOYEE FILE

EOF

READ INDIVIDUAL EMPLOYEE FILE

READ INDIVIDUAL PAYROLL WORKSHEET

EOF
ACCOUNTS RECEIVABLE

STRUCTURED CHART
ACCOUNTS PAYABLE

STRUCTURED CHART
GENERAL LEDGER

STRUCTURED CHART
Most of my estimates were quite close to the actual time required. My overall estimate was somewhat longer than the actual time spent mainly because I ran out of time to proofread my work.

When I made my time estimates I tried to recall similar projects and the time I spent on them. I tried to come up with the time that I thought the step would require and then I would add another two hours in case of any mishaps.

Out of the six steps, I found that the creation of the dataflow diagrams was the most time consuming and difficult. I found that the difficulty of the other steps was dictated by the quality of the dataflow diagrams. Because my DFD's were quite clear and logical, the creation of the data dictionary, the process specifications, and structured charts were mainly a reiteration of the logic graphically displayed in the DFD's.

Although the DFD's were the most difficult to create and had a preponderant impact on subsequent steps, I cannot overlook the initial step of the whole project which was the observation step. I spent more time interviewing and observing Shanahan and Son's than I had expected. The people I interviewed were very helpful and after the initial interviews everyone was willing to answer more questions, if I had them. This was fortunate because while working on my DFD's, I was required to ask the owner of Shanahan and Son's a few questions about the General Ledger System.
Overall, though I had few questions after my first interviews because in the past I had been taught to pay attention to the smallest of details when observing or interviewing. For instance, by keeping track of the colors of work reports, I was able to follow the logic of most of Shanahan and Son's business systems quite easily.

The time estimates were a little high for the data dictionary and the process specifications steps. This occurred because I did not initially realize that the dataflow diagrams would help me immensely in the development of the data dictionary and the process specifications. The difficulties arising from developing the data dictionary stemmed from the time consuming writing of the definitions and from the confusion concerning the descriptions of some dataflows. I also found that it was difficult to keep track of aliases and I found myself creating aliases for dataflows which were physically similar and not logically similar. Because I did not have enough time to correct this error it still exists in my data dictionary. Nevertheless, I believe that the names of the dataflows and the notes for the dataflows will make it clear the logical function of the incorrect aliases.

Although, I only spent sixteen hours developing the four structured charts for the four business systems analyzed, I believe my time estimate is close to the actual time required for that step. In the consequence of a lack of time I found myself having to squeeze in at least 24 hours of work into 16.
A structured chart is primarily based on the overview DFD of a system, but there are many differences concerning the overall structure of these two documents. A DFD and a structured chart are similar because they both reveal the logic of a particular system, but in contrast they will do so in two distinct languages or methods. While completing my structured charts I often found errors that I would have to correct. As a result, I cannot help but feel that there are more errors that I overlooked. I believe that if I had had more time, I could have been more confident in the validity of the structured charts.

The sixth step that of finalizing or proofreading my work was also an appropriate estimate. If I had followed my estimates more closely, I could have had time to correct the discrepancies among the aliases in my data dictionary. I could have also made the left margins larger for the majority of the documents in my project so that my project would be more legible.

I feel that my estimates were quite correct. They may have been a few hours too long, but only by a negligible amount. I believe that this project has taught me to follow my estimates more closely and to call them and treat them as deadlines. If I would have followed my time estimates more religiously my project would have definitely have been of a higher quality.