

**Appendix
A**

WORKSHOP

*Get on the
Fast Track!*



TM

**SYS-ED/
COMPUTER
EDUCATION
TECHNIQUES, INC.**

1 Introduction

Workshop A:

- C Create a source PDS to store all your source code for the class.
- C Code the JCL to compile and link your programs will be provided by the instructor.
- C Code a PL/I program to read 6 numerical values into six variables.
- C Add up all the variables and compute a total.
- C Display the total.
- C Calculate the average of the 6 numbers and display the average.

Workshop B:

- C Write a PL/I program to compute the area of a triangle given the base and height:
- C Use the following formula: $\text{Area} = (1/2 \text{ Base}) * \text{Height}$

2 Data Items and Representation**Workshop A:**

Write a series of declarations for the following identifiers.

Attribute	Initial Value	Comment
CHARACTER	Hello from the stars.	
FIXED DEC	1867	
BIT	10101010101010101010	Use repetition factor.
FIXED DEC	-32.7865	
FIXED DEC	0000444	
CHARACTER	Stars and stripes	
FLOAT DECIMAL	100E+2	
FIXED BINARY	-32767	
CHARACTER	7657464875	

3 Basic Statements

Workshop A:

Write a program to read five data cards where each card contains:

- C Part Number
- C Unit Price
- C Quantity on hand

Compute the extension using the following formula:

- C $\text{Extension} = \text{Price} * \text{Qty}$
- C Compute and display the total extensions.
- C Use list directed I/O for all I/O.

Workshop B:

- C Write a PL/I program to read three values using GET LIST.
- C Sort these values into ascending sequence and print the sorted numbers using PUT LIST.

Workshop C:

- C Use the BOOL function to perform different operations on the following bit strings:

```
11001010  
11110000  
-----
```

- C Perform a Not OR operation.
- C Perform an XOR (exclusive OR) and AND operation.
- C Perform a NAND (Not AND) operation.
- C Perform a NXOR (Not exclusive OR) operation

4 Stream I/O

Input Dataset

Field Name	Length	Attributes
Social Security	9	Character
Name	35	Varying Character
Salary	9,2	Fixed Decimal
Department	2	Character

Output Report

```

Fly By Night Company                               Page 999
Social Security  Name                               Dept Salary
999999999          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999999999          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999999999          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999999999          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
                                     Total Salary  999999.99
    
```

Description

- C Using stream edit I/O, read the input file and print the report.
- C The program should handle end-of-page processing and print a new title at the top of each page. Each page should have a page number.
- C At the end of file, print a grand salary total.

5 Subroutines, Functions, and Storage Classes

Input Dataset

Field Name	Length	Attributes
Social Security	9	Character
Name	35	Varying Character
Salary	9,2	Fixed Decimal
Department	2	Character

Output Report

```

                                Fly By Night Company                                Page 999
Social Security Name                               Dept Salary
999-99-9999  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999-99-9999  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999-99-9999  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999-99-9999  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
                                Total Salary  999999.99
    
```

Description

- C Using stream edit I/O, read the input file and print the report.
- C The program should handle end-of-page processing and print a new title at the top of each page. Each page should have a page number.
- C At the end of file, print a grand salary total.
- C For each input record, pass the Social Security number to a function. The function will pass back the formatted Social Security number. The formatting would insert dashes in the appropriate positions in Social Security number.
- C For each input record, pass the Salary to a subprogram. The subprogram is to maintain a running total of the salary.
- C Code another subprogram that will return the total salary.

6 Structures and Record I/O

Input Dataset

Field Name	Length	Attributes
Social Security	9	Character
Name	35	Varying Character
Salary	9,2	Fixed Decimal
Department	2	Character

Output Report

```

                                Fly By Night Company                                Page 999
Social Security  Name                                     Dept Salary
999-99-9999    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999-99-9999    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999-99-9999    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999-99-9999    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
                                Total Salary  999999.99
    
```

Description

- C Using Record I/O, read the input file and print the report.
- C The program should handle end-of-page processing and print a new title at the top of each page. Use the carriage control character in the first position of the output record. Each page should have a page number.
- C At the end of file, print a grand salary total.
- C For each input record, pass the Social Security number to a function. The function will pass back the formatted Social Security number. The formatting would insert dashes in the appropriate positions in Social Security number.
- C For each input record, pass the Salary to a subprogram. The subprogram is to maintain a running total of the salary.
- C Code another subprogram that will return the total salary.

7 Using Arrays

Workshop A:

- C Create an array containing the year's daily temperatures. Assume that the year has 20 days; this will serve to minimize the typing of data.
- C Read the years temperatures into the array.
- C Using the array, compute the average, largest and smallest temperature. In addition to the values, print the day (subscript value) of the average, largest and smallest temperature.

Workshop B:

- C Create a two dimensional array containing the year's daily temperatures in each row. Each column will contain a different year.
- C Assume that the year has 20 days.
- C Read the years temperatures into the array.
- C Using the array, compute and display the average, largest and smallest temperature for each year.
- C In addition, compute and display the average, largest and smallest temperature for the five years.

8 Functions

Workshop A:

- C Input birth dates from the input stream. The dates are in the format mm/dd/yyyy.
- C Extract the month, day and year from the input record.
- C Validate the date using the following rules:

Month	must be between 1 and 12.
Day	must be greater than 0.
Day	cannot be greater than 31 for the months 01, 03, 05, 08,10 or 12.
Day	cannot be greater than 30 for the months 04, 06, 09, or 11.
Day	cannot be greater than 29 for a leap year February.
Day	cannot be greater than 28 for a non-leap year February.
All characters	must be digits, except for the slashes in the appropriate positions.

9 On Units and Exceptional Conditions

Workshop A:

Input Dataset

Field Name	Length	Attributes
Social Security	9	Character
Name	35	Varying Character
Salary	9,2	Fixed Decimal
Department	2	Character

Output Report

```

                                Fly By Night Company                                Page 999
Social Security Name                                Dept Salary
999999999  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999999999  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
999999999  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  **Invalid **
999999999  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX  999999.99
                                Total Salary  999999.99
    
```

Description

- C Using stream edit I/O, read the input file and print the report.
- C The program should handle end-of-page processing and print a new title at the top of each page. Each page should have a page number.
- C At the end of file, print a grand salary total.
- C Using the ON Units, check the input salary field for a valid numeric data. If it is invalid, print 'Invalid' on the report.

10 Miscellaneous Topics

There is no workshop for this chapter.

