Exercises: Process Modeling

1. The purpose of the production scheduling system is to respond to a PRODUCTION ORDER (submitted by the SALES DEPARTMENT) by generating a daily PRODUCTION SCHEDULE, generating RAW MATERIAL REQUISITIONS (sent to the MATERIALS MANAGEMENT DEPARTMENT) for all production orders scheduled for the next day, and generating JOB TICKETS for the work to be completed at each workstation during the next day (sent to the SHOP FLOOR SHIFT SUPERVISOR). The work is described in the following statements. The production scheduling problem can be conveniently broken down into three functions: routing, loading, and releasing. For each product on a PRODUCTION ORDER, we must determine which workstations are needed, in what sequence the work must be done, and how much time should be necessary at each workstation to complete the work. This data is available from the PRODUCTION ROUTE SHEETS. This process, which is referred to as ROUTING THE ORDER, results in a ROUTE TICKET. Given a ROUTE TICKET (for a single product on the original PRODUCTION ORDER), we then LOAD THE REQUEST. Loading is nothing more than reserving dates and times at specific workstations. The reservations that have already been made are recorded in the WORKSTATION LOAD SHEETS. Loading requires us to look for the earliest available time slot for each task, being careful to preserve the required sequence of tasks (determined from the ROUTE TICKET). At the end of each day, the WORKSTATION LOAD SHEETS for each workstation are used to produce a PRODUCTION SCHEDULE. JOB TICKETS are prepared for each task at each workstation. The materials needed are determined from the BILL OF MATERIALS data store, and MATERIAL REQUEST are generated for appropriate quantities. Job tickets and the production schedule are provided to the Shop Floor Supervisor.

2. During interviews, the employment project team is told that employment clerks REVIEW APPLICANT DATA that the applicant originally filled out and became retained APPLICANT DATA from which company personnel select applicants to interview. From REVIEW APPLICANT DATA, an INTERVIEW NOTIFICATION is sent to the APPLICANT. APPLICANT DATA created is immediately used along with INTERVIEW DATA from the APPLICANT by INTERVIEW APPLICANTS to create INTERVIEW DATA INTERVIEW DATA is immediately used by APPROVE APPLICANT which sends a JOB NOTIFICATION to the APPLICANT. Immediately following APPROVE APPLICANT, APPLICANT DATA is used by CREATE PERSONNEL FILE to create a PERSONNEL MASTER that is retained in PERSONNEL DATA, as well as create a NEW EMPLOYEE data object that will be processed by personnel at a later time

3. During interviews, the employment project team is told that WITHHOLDING INFORMATION is received from the EMPLOYEE (new employee) and used to COMPLETE WITHHOLDING DATA, with the WITHHOLDING DATA retained as part of PAYROLL DATA WITHHOLDING DATA is immediately used along with retained PAYROLL DATA by ENTER PAYROLL DATA to create a PAYROLL MASTER as part of the retained PAYROLL DATA. During interviews, the employment project team is also told that the retained PAYROLL DATA is used by PERFORM PAYROLL CALCULATION to create current PAYROLL DATA that is immediately used by CREATE CHECKS to create PAYCHECK DATA PERFORM PAYROLL CALCULATION also updates the retained PAYROLL DATA PAYCHECK DATA is immediately used by PREPARE PAYROLL REPORT to create PAYROLL REPORT DATA to be retained as part of PAYROLL DATA. During interviews, the employment project team is also told that TAX REPORT DATA from the retained PAYROLL DATA is used by CREATE TAX REPORTS to create TAX REPORTS to send to GOVERNMENT AGENCIES.

4. During interviews, the NG&T project team is told VALID RETAIL INVOICE that comes from order validation is used along with the retained CUSTOMER TRANSACTION and retained CUSTOMER DATA by CREATE ORDER INVOICE to create a retained ORDER INVOICE. CREATE ORDER INVOICE also updates data in the retained CUSTOMER DATA and creates MGR RETAIL SALES DATA to be used at a later time in producing manager reports. The retained ORDER INVOICE along with retained CUSTOMER DATA is used by CREATE SHIPPING INVOICE to create a retained SHIPPING INVOICE. CREATE SHIPPING INVOICE also creates MGR RETAIL SALES DATA and updates retained CUSTOMER DATA. The retained SHIPPING INVOICE is used along with retained CARRIER DATA by CREATE CARRIER MANIFEST to create a retained CARRIER MANIFEST, with a copy of the CARRIER MANIFEST given to the CARRIER. CREATE CARRIER MANIFEST also creates MGR P/M ORDER DATA

5. During interviews, the NG&T project team is told that VENDOR ORDER PROCESSING DATA from order validation is used along with retained INVENTORY DATA by DETERMINE LOW INVENTORY to create LOW INVENTORY ITEMS. LOW INVENTORY ITEMS is then immediately used along with the retained VENDOR MASTER by SELECT VENDOR to produce a complete set of VENDOR ORDER DATA VENDOR ORDER DATA is then immediately used by CREATE VENDOR ORDER to create the VENDOR ORDER that is retained and a copy sent to the VENDOR. CREATE VENDOR ORDER also creates MGR VENDOR DATA that is used at a later time to produce manager. During interviews, the NG&T project team is also told that when the filled vendor order arrives from the VENDOR that it is accompanied by a VENDOR ORDER RECEIPT. Immediately following RECEIVE VENDOR ORDER, the RECENED ORDER along with the original VENDOR ORDER that was retained is used to CHECK RECEIPT - ORDER for discrepancies. CHECK RECEIPT - ORDER may produce a DAMAGED ITEM REPORT and/or INCORRECT ITEM/AMOUNT data object to send to the VENDOR. CHECK RECEIPT - ORDER also creates MGR VENDOR ORDER DATA and a VALID ORDER RECEIPT. The VALID ORDER RECEIPT is then immediately used along with retained INVENTORY DATA by UPDATE INVENTORY to update inventory on hand that is retained in INVENTORY DATA