# Northern Lights Technical School

Northern Lights Technical (NLT) School was founded in 1985 in Pittsfield, MA. It was the first computer software training business in the area and was immediately successful. Over the decade since its inception, NLT has grown steadily and is still the market leader in computer training in the Pittsfield area. The growth of the company has caused bookkeeping problems for the company who, up until the present, have kept all their business records in a series of MS Excel spreadsheets. To address the inadequacy of the current system I am, asking you to prepare a design proposal and prototype for the database system for NLT. An initial business analysis has already been completed by a member of your company, and the results of that study follow below.

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NLT currently employs 10 full-time trainers. One of the trainers has been with NLT since it opened, and another has been with the company for five years, but the others have been around for much shorter periods of time. (Through the company's history, a trainer typically stays with NLT for around two to three years.) When hired, each trainer is issued an employee number. Information also recorded by NLT on each trainer, in addition to the employee number, includes the employee's name (first, middle and last), address (street1, street2, city, state, and zip), phone number, and e-mail address.

Trainers must, obviously, learn a course's material before they can teach a class in that course. Trainers are typically given one day per week to study new course materials. (However, newly hired trainers get the first two weeks of their employment to study for their first teaching assignments.) NLT attempts to have at least two trainers qualified to teach every course (although this may temporarily not be the case for newly developed classes). This provides flexibility in scheduling classes and trainers. When a trainer is familiar enough with the course material to teach a class in a given course, the trainer, the course, and the date of qualification is recorded in a spreadsheets. From this list it can be determine which trainers are qualified to teach which classes.

The courses themselves are identified by a unique code for each course. (For example, MSACCESS1 is used for the beginning Microsoft Access course.) Most courses are one day in length, although some are two or three days, and a few are five days. The fee charged to attend a class varies depending on the course. The more technical courses (e.g., Advanced Novell Networking) are more expensive than introductory courses and, of course, multi-day courses are more expensive than single-day courses. It is also important to note what hardware requirements a course has. For instance, some courses require computers running macOS while most require Windows 10 machines. Although classes in most courses can be taken by anyone at any time, some courses are advanced enough that they have NLT prerequisites. That is, before a client may enroll for some of NLT's offerings, they must complete one or more prerequisite courses. (And some courses with prerequisites are themselves prerequisites for one or more other courses.)

The specific software programs used in the courses vary. Some courses (e.g., Introduction to Microsoft Office) utilize several programs (e.g., Word, Excel, PowerPoint, etc.) while others (e.g., Advanced Microsoft Word) require only one. The name of the software program and its publisher are recorded. The operating system that the program requires to run (e.g., Windows 10) is also recorded. The number of licenses that NLT owns for each program is also important to track. (This number represents the maximum number of copies of a particular program that can be in actual use by NLT at any given moment in time.) For instance if NLT has 15 licenses for TurboCAD (software for designing floor plans, technical illustrations, and flow charts) they know they cannot have more than 15 people enrolled in the TurboCAD course at any particular time.

Another important component of the courses offered by NLT is the course book that is selected for use in each course. The fee charged each client for each course includes one copy of the course book. No two courses use the same book. The books used for each class is recorded in an Excel spreadsheet. This spreadsheet includes the International Standard Book Number (ISBN), book title, author name(s), publisher, and list price. The books are ordered from a variety of book vendors (each with a unique name). All of the books NLT orders are popular titles available from any of the vendors. For each book placed, the order is assigned a unique order

number and records the date that the order was placed.  A typical book order will contain anywhere from one to 10 different titles.  Since she attempts to keep NLT's on-hand inventory of books to a minimum, she orders specific titles in small quantities, and orders daily.  Most orders are delivered within one or two days.  The status of each order is noting by indicating whether it is open (undelivered) or closed (delivered).  Orders can be filled by a number of different shipments. For all orders, the quantity of each book on the order and the actual price charged per book by the vendor are recorded.  (There are occasional differences in the price charged by a vendor for a book compared to the publisher's list price.)

The core of NLT's business, of course, is the enrollment of clients for classes offered by the company.  NLT offers classes representing over 30 different courses to its clients.  It publishes a schedule of class offerings each month that it mails out to clients who have attended at least one class in the last six months.  A listing for a specific class offering includes information on the course taught in the class, the trainer, the room, and the start date.  For identification purposes, each scheduled class is also assigned a unique reference number.

Each client is assigned a unique client number.  The client's name (first, middle and last), address (street1, street2, city, state, and zip), and phone are recorded.  Additionally, the initial date that a client enrolls for a NLT course is also recorded.  (This facilitates marketing mailings of the "Happy 1st Anniversary as a NLT Client" variety.)  Since enrollment requests for some of NLT classes may exceed the capacity of the class, the date & time that a client requests to enroll in a particular class must be recorded.  If the class is at capacity the client is placed on a waitlist otherwise they are confirmed as a student for the class. If they are placed on a waiting list, then they may be accepted for a class if other clients cancel their enrollment.  The date & time of enrollment request determines the order in which clients on the waiting list are added to a class.  If the client is not placed on a waiting list, then immediate full payment for the class is required.

Although each course has a predetermined fee, the actual amount that a client pays for attending a class varies depending on what membership type the client has.  Each client, when they first seek to enroll in a NLT course, is required to choose a membership type.  Each membership type is identified by a single-letter code. Additional information associated with each membership type is the price of the membership, the duration (in days) that the membership is good for, and the discount applied to the fee charged for any classes enrolled in by the client.  For example, a client that chooses the annual discount plan (code A) pays $300 a year for membership, but then receives a 30% discount off the regular fee they would otherwise pay for any class for an entire year.  A similar semi-annual plan (code S) costs $200 and also provides a 30% discount.  There is also a regular membership (code R) that lasts one year and has no charge but provides no discount, and the employee family membership (code E) which is available to members of an employee's immediate family and that lasts one year with a 25% discount.  (Additional membership types are in the process of being set up, but have not been sold to any client yet.)  A client may renew or change membership types at the end of any membership period.  When a client is assigned to a membership type, the date of the assignment is recorded as well as the amount of payment made.

NLT occupies a suite of large office spaces in a modern office building in downtown Pittsfield.  Some of the office space is used for administrative purposes and storage, but most of it has been renovated into computer-training classrooms in which the classes offered by NLT are taught.  The capacity, in students, of the classrooms ranges from 10 for the smallest room up to 18 for the largest of the rooms.  The classrooms also vary in the type of computers installed in them.  Two of the classrooms have Computers running MacOS while the others have Windows 10.