HeavyLifting II
by Occupational Health Logic
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A program for calculating the NIOSH Lifting Equation

Thank you for your interest in HeavyLifting II. This program is designed to do the mathematical "heavy lifting" as you analyze multitask lifting jobs using the NIOSH Lifting Equation. It should work fine in Windows 95 and Windows 98. I expect it should work in Windows NT but it has not yet been tested in this operating system.

The current downloadable program is not completely finished. For example, report printing functionality has not been programmed as yet. However, the program in its current configuration works well as a calculator and as a database for storing information about lifting jobs.

I will go through the installation and use of the program. You should have some familiarity with the NIOSH lifting equation, and it would be ideal if you also have the "Applications Manual for the Revised NIOSH Lifting Equation." If not, you can obtain this publication at the NIOSH website, specifically http://www.cdc.gov/niosh/94-110.html.

In the comments which follow, "job" will refer to a collection of individual lifting "tasks." For example, in the "job" of stacking boxes on a multitier shelving unit, filling each shelf may constitute a separate "task."

Installation

The program is self installing. Simply click on the link and follow the directions. In your Program Files folder, a new folder called HeavyLiftingII will be created. In this directory will reside the program files. An entry for this program should appear in your Start menu, and if you like you can of course create a shortcut for your desktop.

Opening the Program - Selecting the Database

When you start the program, the first thing you should see is a dialog box which allows you to choose a database. The database is where you will store jobs and their component tasks. The default database is called Hlii.mdb, and resides in the aforementioned HeavyLiftingII folder. If you like, you can (I recommend that you do) make copies of this database file, and name them anything you like. That would enable you to keep separate databases for different departments or different companies. Also, if you place two tasks with the same name in the database the program may not function correctly (this will be addressed further below). For this reason, I would suggest that you make a separate copy of the database after each use of the program. That way, if the working database is damaged you can easily restore it without losing a lot of data.

You can rename the default database, and name your copies anything you want (with a .mdb extension). The database comes with one sample job in it. Don't empty the database (it has to have at least one job in it) or the program won't function. This will be addressed in the future.

If on opening the program you select an unrelated database file (such as any other database that you already have on your computer) the program will crash.

The Main Screen

The main screen (Worksheet) is where lifting data are entered and calculated. First, we will address the text boxes in which data are entered. Then, we can look at the various command buttons. Finally, we can discuss a few of the menu items (all of the menu items are not functional at this point).

Text Boxes and Command Buttons

-General Job Data. The text boxes in the top third of the screen are for entry of general data about the job and the job analysis. These include the department, the job title, the analyst performing the job, and the date. Also, there is a large box for a more detailed job description. The slightly smaller white box to the right is a list box which is not used for data entry. We will discuss the use of this box later.

-Task Variables. These are the variables described in the NIOSH Lifting Equation, including average weight, maximum weight, vertical and horizontal hand positions, etc.. At this point it is assumed that the user has some knowledge of the meaning of these variables as described in the "Applications Manual for the Revised NIOSH Lifting Equation." If control of the load is required at the destination of the lift, the small box can be checked. I would like to make special mention of the box titled "Task name". For each task in the multitask job, you have to put a unique task name. A given job cannot have two tasks with the same name, and you can't leave this blank. I would suggest that you give every task saved in the database a unique name, to prevent possible problems later (see Menu Items).

-"Calculate Task" Button. Once the appropriate data items are entered, we can obtain the calculated data for the individual task by clicking this button. The various multipliers and other calculated items will appear in the "Calculated Data" table. Again, we will assume a familiarity with these concepts from the "Applications Manual for the Revised NIOSH Lifting Equation." If the job is a single task job, then you are done at this point. However, if it is a multitask job then go on to the next step.

-"Add Task to Job" Button. This button saves the current task in a collection, and places relevant data from this task into the grid near the bottom of the screen. At the very bottom of the screen, a count will be kept of the number of tasks entered into the job.

-"New Task" Button. You can use this button to clear the task variable data entry boxes for the next task. However, here is a tip: if the new task does not vary greatly from the previous one (for example, the only difference might be change in a shelf height) then you may not want to use this button; you can simply enter a new task name and change the specific task variable that does differ. This can save you some typing.

For each task entered and calculated, click on the "Add Task to Job" button to add the task to the job. The tasks will be entered into the collection and into the grid. If you wish to remove a task from the grid, but do not wish to permanently delete it, simply click on the desired task in the grid. It will be removed from the grid, and placed back into the worksheet data entry boxes. If an error had been made before the task was placed into the grid, it can now be fixed and the task recalculated and reentered into the grid (in this situation you do not need to rename the task). Or, the task can be permanently deleted at this point by clicking the "Remove Task" button.

-"Remove Task" Button. This button permanently removes the current task from the collection (but not from the database if it has already been saved).

-"Calculate Job" Button. This button is used after all the tasks are entered into the job (and appear in the grid). It calculates the Composite Lifting Index which will appear in the box labeled CLI. The tasks in the grid will be re-ordered (from worst to best) as described in the "Applications Manual for the Revised NIOSH Lifting Equation."

Menu Items

-File. There are several items in the File menu which are useful.
        -New Job. This provides two options:
                1. Create New Job. This clears the screen for entry of an entirely new job.
                2. Construct from Existing Tasks. All individual tasks currently in the database will appear in the list box at the top right of the screen. These tasks can be used to construct a new multitask job. One caveat: a job cannot include two tasks with the same name. Clicking on a task in the list will enter it into the task data boxes.

        -Open Job. This changes the screen view to a tree which shows all of the jobs, and their component tasks, which are currently in the database (you have to click on JOB DATA to drop-down the list, and click on the "+" signs to view the component tasks for each job). By clicking on a given job in this list, and then returning to the main screen (by clicking Worksheet on the View menu) you can work with that selected job.

        -Save. This saves the job you are currently working with to the database. Again I would suggest being careful not to enter two tasks with the same name in the database (even if they are associated with different jobs). This problem will be corrected in the future.

        -Print. This does not work at present but will be addressed in the future.

        -Exit. This simply closes the program. There is not currently a provision for automatically saving data, so make sure to save your data before exiting.

-Edit. These menu items do not currently function.

-View. This allows you to toggle back and forth between the Worksheet (the main screen) and All Jobs (the tree view) screens.

-Weight. This allows you to use kilograms or pounds for the weight measures in your job (the default is lbs). However, it is very important that you do not mix kg tasks and pound tasks in the same job! (You could include a kg or lb designator in the task name for each task to help avoid confusion if you are in a situation where you will be analyzing jobs using both measuring systems.)

-Help. This does not do anything currently (you are reading the only available help system!)

Well, that is it in a nutshell. If you have any problems with it, send e-mail. If you like it a lot, I'd appreciate hearing that as well. As I pointed out this is a work in progress and so if you have ideas for features to include, that would be appreciated.

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