

# Kei OpenMCR

## User Manual

### Basic Usage

#### Installation

For download and installation instructions, see the project homepage: <https://github.com/orchardguides/kei-open-mcr>

#### Printing Sheets

In order to use the OpenMCR software, students must use the provided multiple-choice sheets. Two options are available (click the names to print PDFs):

- **multiple\_choice\_sheet\_75q** ([https://github.com/orchardguides/kei-open-mcr/blob/main/src/assets/multiple\\_choice\\_sheet\\_75q.pdf](https://github.com/orchardguides/kei-open-mcr/blob/main/src/assets/multiple_choice_sheet_75q.pdf)): Has 75 questions as well as space for students' full names, course ID, student ID, and test form code.
- **multiple\_choice\_sheet\_150q** ([https://github.com/orchardguides/kei-open-mcr/blob/main/src/assets/multiple\\_choice\\_sheet\\_75q.pdf](https://github.com/orchardguides/kei-open-mcr/blob/main/src/assets/multiple_choice_sheet_75q.pdf)): Doubles the number of questions to 150, but removes the bubbles for student name. Instead, a non-processed write-in name field is provided.

The program is robust and should work with most printers and scanners, however best results will be obtained by using a laser printer in black & white mode with the 'save toner' option turned off.

#### Filling Sheets

Students should be instructed to fill bubbles thoroughly and erase completely if necessary. It is not necessary to require any specific type of pen or pencil to be used.

#### Creating Answer Keys

If you would like to take advantage of the automatic grading feature of the software, you must provide it with one or more answer keys. To create an answer key, simply print a normal sheet and put **9999999999** in the **Student ID** field. Also, add a **Test Form Code** which will be used to match students' exams with the correct answer key, and finally fill in the exam with the correct answers.

#### Reading Sheets

Simply follow the following steps to process any number of filled exam sheets:

1. Scan all sheets using a standard scanner. Convert them into individual images and place them into a single folder. This includes answer keys - there is no need to scan them separately.
2. Run the software. If you used the installer, a shortcut will be located in your Start menu. The software may take a moment to start.
3. Under **Select Input Folder**, click Browse and select the folder you stored the images in.
  - If you select the *convert multiple answers in a question to 'F'* option, then if a student selects, for example, A and B for a question, the output file will save that as F instead of [A|B].
  - If you select the *save empty in questions as 'G'* option, if a student skips a question by leaving it blank, the output file will save that as G instead of as a blank cell.
4. Under **Select Output Folder**, click Browse and select the folder where you would like to save the resulting CSV files.
  - If you select the *sort results by name* option, results will be sorted by the students' last, first, and middle names (in that order). Otherwise, results will be saved in the order processed.
5. Click Continue.

## Scoring Results

In addition to reading scanned images, the software can also automatically score the exam results. It does this by comparing the provided keys with the output. There are three options for this, depending on which way you generate your exams:

**One Exam Variant** If you give every exam-taker the exact same exam, you can instruct them to leave the **Test Form Code** field blank on their sheets. In addition, leave that field blank on the answer key sheet. All exam results will be compared to the single answer key sheet provided.

**Distinct Exam Variants** Finally, you can provide the exam-takers with multiple wholly distinct variants of the same exam. In this case, each exam will be scored by selecting the answer key with an exactly matching **Test Form Code**. No rearrangement will be performed.

## Output Files

After the program finishes processing, results will be saved as CSV files in your selected output folder. These files can be opened in Excel or in any text editor. Files will be saved with the time of processing to avoid overwriting any existing files.

If you did not include any answer keys, one raw file will be saved with all of the students' selected answers and no scoring is performed.

If you did include one or more answer keys, two more files will be saved in addition to the aforementioned raw file. One of these files will have all of the keys that were found, and the other will have the scored results. In the scored file, questions are saved for each student as either **1** (correct) or **0** (incorrect).

### **PDF Handouts**

After creating the csv output files, the program automatically generates pdf result sheets that can be distributed to the test takers. These handouts report overall score and list out every incorrect response with a corresponding correction.

A pdf file listing the correct response for every question in each of the Answer Keys is also generated.