Engineering 1281H & 1282H
Fundamentals of Engineering for Honors

FEH Shaft Encoding and RPS Pre-Lab

Guide to Creating and Printing a Micro QR Code

THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Engineering Education Innovation Center

Introduction

Follow this guide in order to print your team's micro QR code prior to attending the Shaft Encoding and RPS laboratory. Note that the steps in this guide most likely will not work on your home computer, so this should be completed in Hitchcock Hall. You will need 1 QR code per team for the lab.

Outline

1. Generate micro QR code
2. Save micro QR code
3. Open QR code in GIMP
4. Add border to QR code
5. Change Printing Size of QR code to 3in x 3in
6. Change printing orientation to compensate for printing errors
7. Print QR Code
8. Cut out QR Code
9. Trace over if necessary

Step-by-step Guide

1. Navigate to http://keremerkan.net/qr-code-and-2d-code-generator/
2. Fill in the following fields as such (See Figure 1 for visual):
    a. Select a Code Action: **Free Formatted Text**
    b. Code Type: **Micro QR Code**
    c. Text: **<TEAM DESIGNATION>**
        i. For team designation, only use your 2 character team label
        ii. This must be in the format <uppercase letter><number> (e.g. A1, B4, H7 etc.)
        iii. Only valid team designations will be allowed to use the RPS systems, so do not embed anything else in this code besides your team designation
    d. Error Correction Level: **Low**
    e. Block Size in Pixels: **15**
    f. Margin Size in Blocks: **1**
    g. Output Type: **Portable Network Graphics (PNG)**
    h. Foreground Color: **#000000**
    i. Background Color: **#FFFFFF**

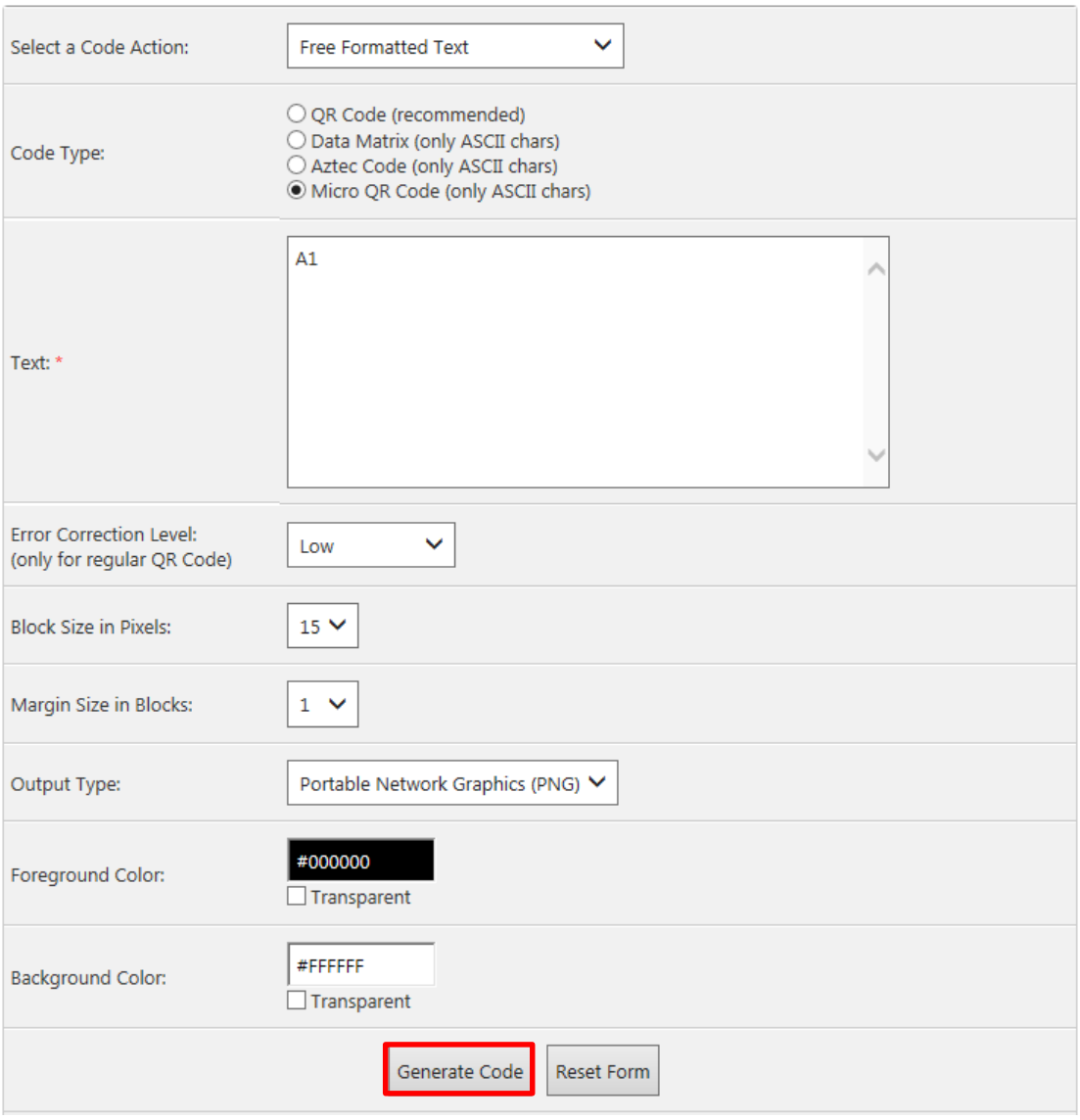

Figure 1: Screenshot of an example completed QR code form (team A1 used as example)

3. After reviewing to making sure all of the fields are completed correctly, select **Generate Code**

4. Your custom QR code should appear on the screen, right click on it and select **Save picture as…** (see Figure 2). If you are using Google Chrome, this may appear as **Save image as…**

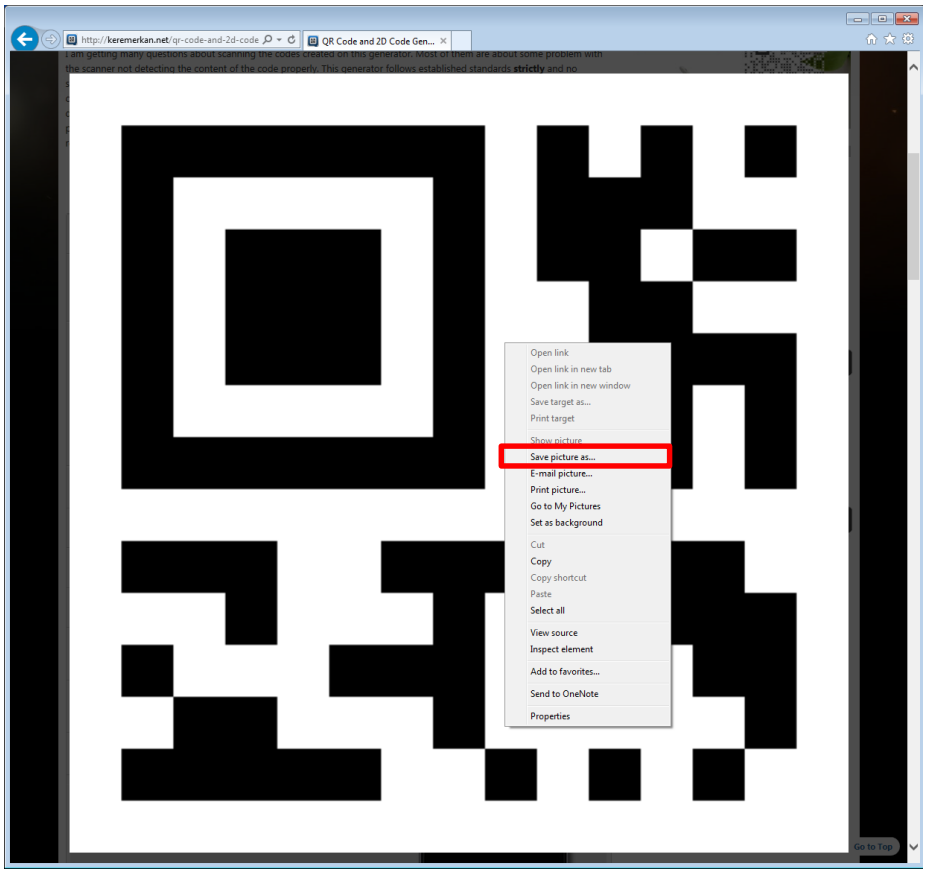

Figure 2: Visual of step 4

5. A save screen should appear. Save the QR code to your Z: drive as a PNG. See Figure 3 for a visual.

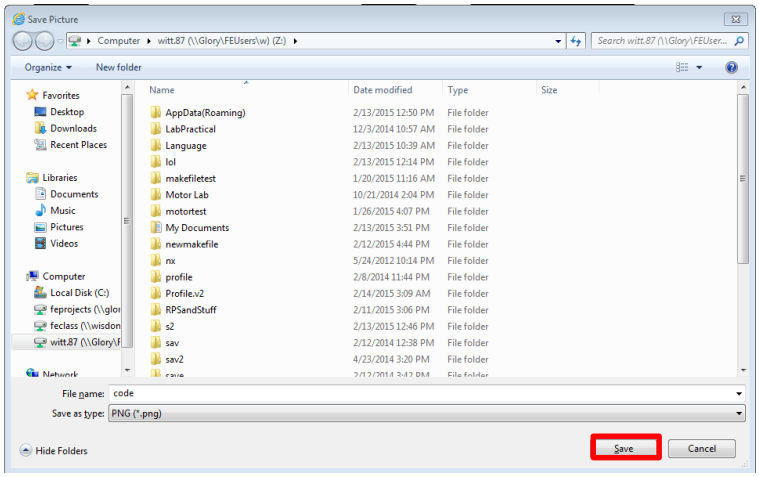

Figure 3: Saving the QR code to the Z: drive

6. Open Windows Explorer and navigate to the location where you saved the QR code
7. Right click on the file and select **Edit with GIMP** (see Figure 4)

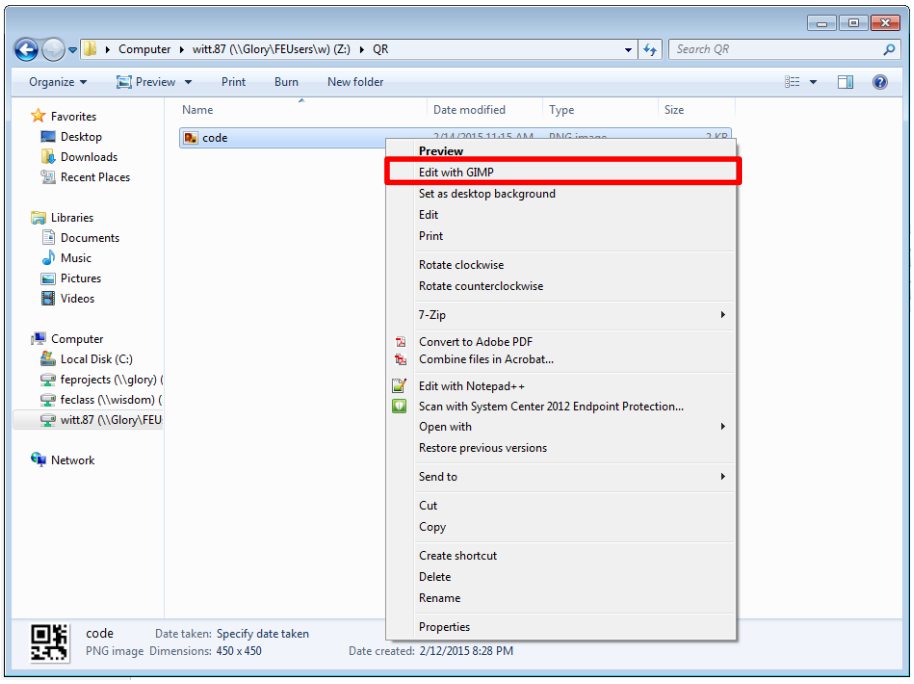

Figure 4: Opening QR Code in GIMP

8. It may take several seconds for GIMP to open; be patient.
9. In GIMP, use the menu bar and go to **Filters → Decor → Add Border** (see Figure 5)

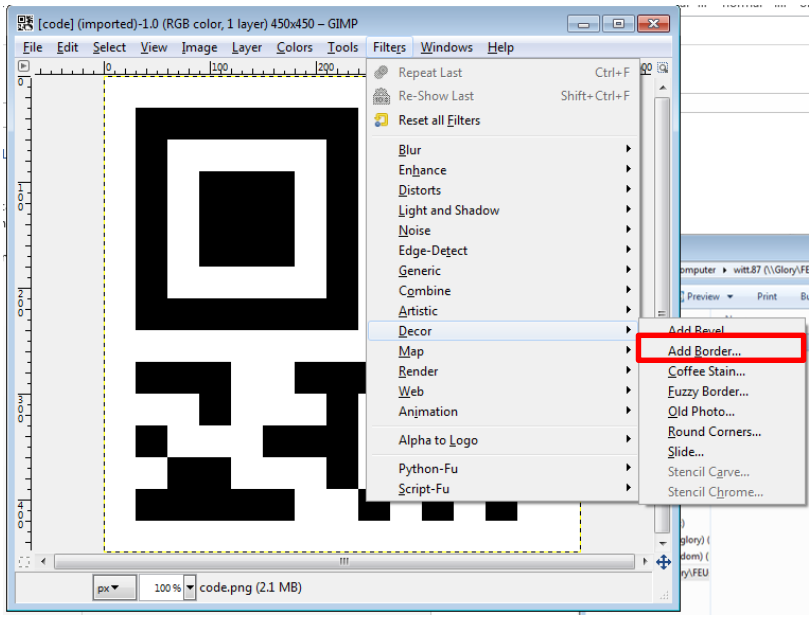

Figure 5: Menu screen for adding border

10. Fill out the following in the Add Border screen (see Figure 6):
    a. Border X size: **1**
    b. Border Y size: **1**
    c. Border color: black
        i. Click on the color
        ii. Under HTML notation, type **000000**
        iii. Press OK (see Figure 7)
    d. Delta value on color: **1**
    e. Select **OK**

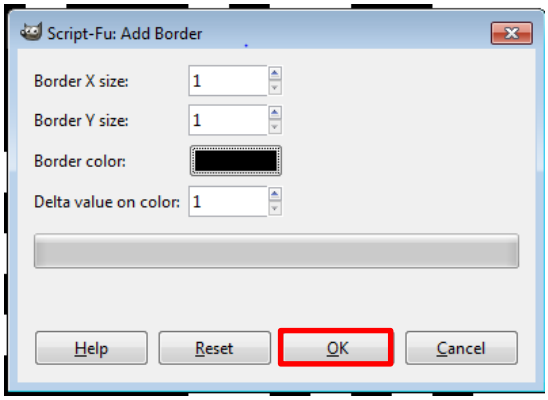

Figure 6: Add Border configuration menu

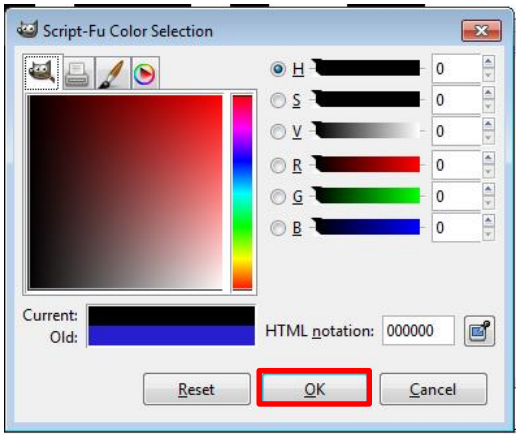

Figure 7: Selecting color menu

11. Use the menu bar to go to **Image → Print Size…** (See Figure 8).

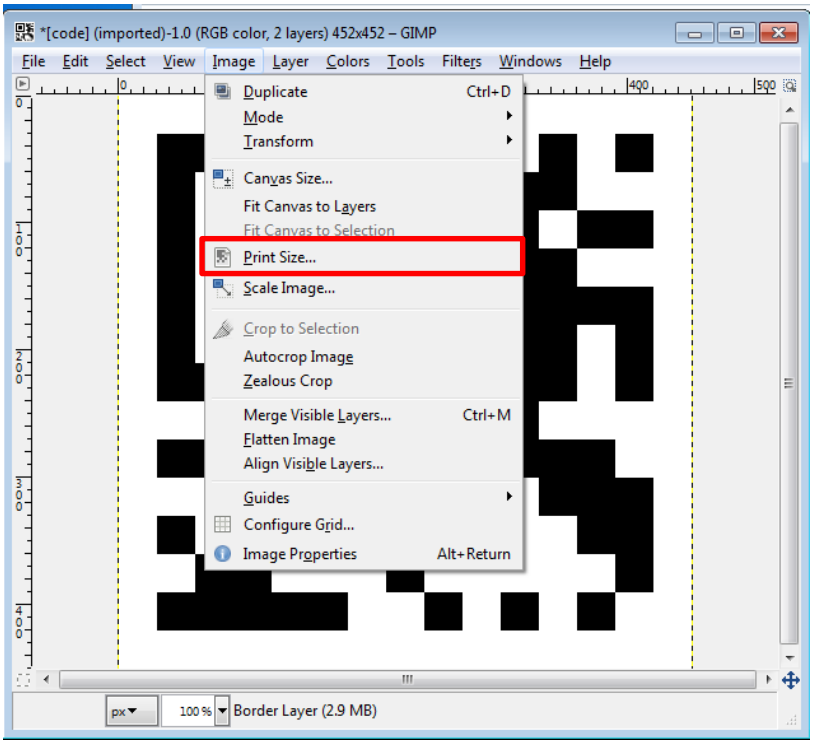

Figure 8: Selecting Print Size

12. In the print size configuration menu, Type **3 for the width** and hit the **Enter key** on your keyboard. The height should automagically change to 3. Select **in** for the units. Press **OK** (See Figure 9).

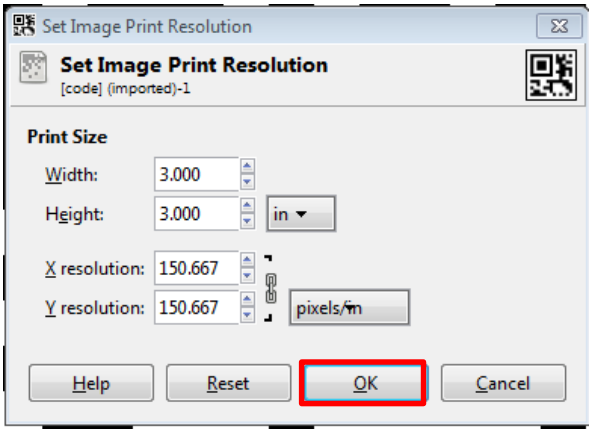

Figure 9: Changing Print Size

13. In order to compensate for printing errors, go to **File → Page Setup** and select **Landscape** (See Figure 10).

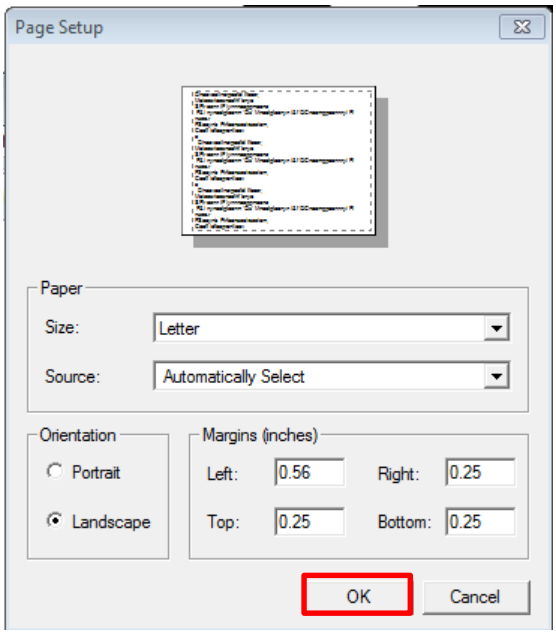

Figure 10: Changing to landscape in order to prevent printing problems

14. Go to **File → Print**. A typical print prompt should appear. Print out your QR code.
15. Save your project as a GIMP XCF so you can access your QR code at a later time by going to **File → Save As...**
16. Once your QR code has been printed, cut your QR code out along the border that you created. **NOTE THAT THE WHITE SPCE AROUND THE QR CODE IS IMPORTANT. DO NOT CUT YOUR QR CODE OUT ALONG THE INSIDE OF THE THIN BLACK LINE.** See Figure 11 for the expected printed out image, and Figure 12 for the QR code after it has been cut out.

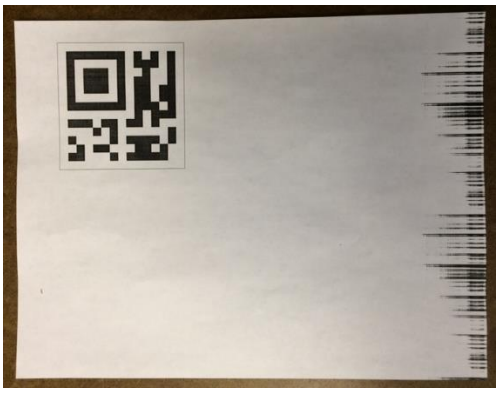

Figure 11: Print out of the QR code

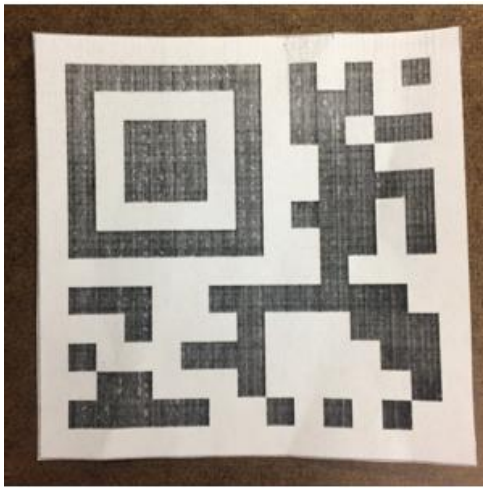

Figure 12: After cutting the QR code. **NOTE THAT THE WHITE BORDER STILL IS PRESENT AROUND THE QR CODE.**

17. If the black parts of your QR code are not a solid black (i.e. if the printer was low on toner), then you will need to trace over the black parts of your QR code VERY carefully in a black marker, or try reprinting it on another printer.