WI21 ITGM 220 CORE PRINCIPLE: PROGRAMMING

ASSIGNMENT 02

A2. Complex Patterns (15%)

Learning Outcomes

After completing this Assignment, students will be able to:

- understand how to use Loops
- understand how to use Decision Statements
- demonstrate how using loops and decision statements can make code more concise.

Key skills:

1. Loops (including nested loops)
2. Decision statements (including nested decision statements)
3. User-defined functions
4. Documenting the ideation and development processes

Overview

You will create a complex pattern using the drawing functions in Processing.

Requirements

1. Student's (creator) name must be clearly visible on the top/bottom/corner of the work.

Procedure

1. Collect images for reference, and create a mood board.

2. Hand sketch out versions of the pattern elements and render in color in your sketchbook. Evolve your design by sketching multiple versions. Do not erase old versions as you would need them for documentations. Pick the final version you are planning to develop in processing.
3. Based on your hand-drawn sketch, create a plan for your project in processing:
    - How will your shapes be layered?
    - What colors will you use?
    - In what sequence will you draw the shapes?
4. Write the code to create your project in Processing.
    - Stage Size Range: 500 x 500 px (smallest) - 1200 x 800 px (largest)
    - Use of at least 1 loop statement and 1 decision statement
    - Use of at least 1 custom function where you have implemented your own shape
    - Maintain good code structure as shown in class (Bracket Placements, Comments, Headings, Variable Names)
5. Create Project Presentation Deck.
    - Consult Sample Project Documentation Structure Guide Below

Submission and Due Date

1. Create an assignment report by Exporting a PDF of your presentation deck.
2. Properly ZIP your saved project.
    - Double Check one last time and make sure the project runs smoothly..
    - Make sure you have included the complete folder content, along with your assignment report pdf.
    - Remember the project might NOT execute if missing essential pngs / sound / libraries.
3. Name your submission zip file correctly:
    - WI21_ITGM220_FirstNameLastName_A2complexpattern.zip
    - for example, John Doe would name the file "WI21_ITGM220_JohnDoe_A2complexpattern.zip
4. Submit this file via the Assessment link in the course menu **before** class starts (8:00 p.m. EST/EDT) on due day
5. Post your 1) complex pattern design drawing + 2) Processing render of the pattern for peer review to the appropriate module discussion forum by 11:59 p.m. U.S. EST/EDT on due date.

Grading

- This Assignment is worth 15 percent of your overall grade in this class.
- Your Assignment will be graded according to the criteria specified in the Complex Patterns Rubric below.

- Detailed Rubric Explanation can be found on BB> Course Work Section.

Mood Board	Sketches	Loops	Decision Statements	Documentation	Generated Sketch	User Defined Functions	Originality and overall complexity
10	15	20	15	10	10	10	10

Recommended Project Documentation Structure

HOW	- Document Size: Portrait. (1920 x 1080) or A4 - Presentation Deck: I recommend using presentation tools to create: Keynote, Powerpoint, Google Slides etc. - Export Format: PDF (No Doc / Txt)
WHO	- Reviewer Analysis: Professor will be your primary reviewer. - Presentation: Project will be presented in class via workstations. Students are expected to use a presentation deck to discuss projects.
WHAT	● **TITLE PAGE** (1 page) ○ Student Name, Class Info, Assignment Number ○ Give your work an interesting title. “HOW I LOOK WHEN I SEE MY BEST FRIEND” “ANGRY JIMMY” ● **IDEA / RESEARCH** (1 - 3 pages) ○ Write a statement explaining what you are planning to do. ○ Cite influential sources as your inspirations: Painting, photos, movies, poetry etc. ○ Any relevant pages taken from your sketchbooks. ● **SOLUTION / EVOLUTION** (1 - 3 page) ○ Pencil / Digital Drawing of your intended Results. ○ Post discarded / older ideas as well. ○ Annotate for clarifications. ● **WORK IN PROGRESS** (1 page) ○ Discuss the evolution of the project by showing at least 1 in-progress screenshot. (Just grab the whole screen)

	○ You can begin with Pseudocode or a flow chart, but not necessary. ● **FINAL OUTCOME** (1+ page) ○ Final Output of the code when executed in Processing. ○ Additional pages explaining interesting details (use zoom in) or color variations.
WHEN	Assignment Submitted to Blackboard before 8:00 pm EST on due day or be considered LATE.

Expectation of an A Assignment:

Before you declare your project finished and ready to deliver, check against the following criterias. Project which qualify for the grade of A should meet most if not all of the following:

Moodboard	Written description of concept includes all features to be implemented. At least 5 different visual references are used. Sketches are included and clearly illustrate the desired visual output. All references and sketches are clearly and individually annotated.
Hand-Drawn Sketches	3 or more ideas sketched. Evolution of ideas clearly presented. Information communication is excellent with ample annotations. The final render communicated intended color palette, proportion and shape motifs. The design contains more than enough details to form an aesthetically sound abstract portrait.
Loops	Processing sketch uses more than 3 loops including at least 1 nested loops. All code that is to be repeated are placed in loops. No repeated elements are 'hard-coded' outside of loops.
Decision Statements	Processing sketch uses at least 3 decision statements including at least 1 nested decision statement. All decision statements are used effectively to enhance the aesthetics of the work.
Documentation	Documentations are well organized in a single file. Communicated the development of concept, workflow, code snippets and final output. Documentation describes the concept behind the pattern and clearly shows the development of the pattern using the references and sketches. All necessary images are placed in the document.

	The document includes a side-by-side comparison of the final render and the Processing output. The Processing code is commented in detail and the comments explain the intent of the code. Materials are organized professionally and are ready to be shared on social media. Ready to be included in the portfolio.
Generated Sketch	The processing output executed the design successfully. The code demonstrates a mastery of programming concepts covered in the unit. The final outcome is polished, aesthetically sound, and ready for portfolio purposes.
User Defined Function	2 or more distinct user defined functions other than PShapes. In 1 or more of these functions, arguments were passed to the functions to alter the outcome. Functions called multiple times. . The usage of functions was essential to generate a complex pattern by allowing code reuse / automation / looping needs. Directly contribute to the above average / good / excellent aesthetic to the final work. *Note: PShape does not qualify to be a user defined function.
Originality and overall complexity	The code for the pattern goes beyond the examples shown in class. The pattern consists of at least 5 different elements that are repeated and uses at least 4 different 2D shape functions. The pattern is clearly the students original design. The aesthetic of the resulting work is excellent. This work shows students pay full attention to details, and show full understanding in most or all of the following: Color Palette, Proportions, Balance, Composition, and Layout. Attention to detail is excellent.