*Turtle Design Project*

**Description**

Did you know you can produce art without ever touching a paintbrush or digital art application? Did you know that art can be created from math?

**Task**

Draw a design using the Python turtle. Be creative! If you need inspiration, search [Fractals](http://www.google.com/search?q=fractals&safe=active&source=lnms&tbm=isch&sa=X&ei=Pa5bVPvcFa_dsAT4m4KAAw&ved=0CAgQ_AUoAQ&biw=1024&bih=643) or [Tessellations](http://www.google.com/search?q=tessellations&safe=active&source=lnms&tbm=isch&sa=X&ei=Wa5bVP3-JeTbsATx8oCwCA&ved=0CAgQ_AUoAQ&biw=1024&bih=643). As part of the program, you must demonstrate the following:

1. Functions - Create functions for your basic design. Functions must demonstrate the passing of parameters (arguments). Functions must be in a separate file that you import into your main file.
2. Loops - Create processes that involve loops. Demonstrate the use of loops to call your function repeatedly.
3. Incorporate colors into your design. Feel free to use any combination of rgb colors, standard colors, filling in of colors gradient colors and random colors.
4. Though creative may be a challenge, your design should generally be aesthetically pleasing.
5. You are an ARTIST now! Name your piece of art.

Optional ( Grade Boosters )

1. Demonstrate the use of mathematical operations.
2. Demonstrate the use of the loop variable in conjunction with your process.
3. Demonstrate the creative application of turtle functions beyond moving and colors.
4. Create functions that incorporate existing functions you've created.

**Rubric**

**Technical Requirements**

|  |  |  |
| --- | --- | --- |
| 1 | 5 | 10 |
| Parts of the design fail to run. Inappropriate use of loops and functions. Simple color usage. Little use of mathematical operations and loop variable. | Demonstrated the use of functions. Used loops. Modified design to include color. Limited use of mathematical operations. Limited use of loop variable. Code appears random at time. | Clever encapsulation of processes as functions. Create functions that call other functions. Use of loop variables in conjunction with process. Incorporated colors that enhanced design. Used additional turtle functions as part of design. Demonstrate the use of mathematical operations. |

**Coding Style**

|  |  |  |
| --- | --- | --- |
| 1 | 3 | 5 |
| Comments offer no insight into the process. Inappropriate names for variables, parameters and functions. Code appears random. Inefficient use of code. | Comments generally describe the process. Appropriate names for variables, parameters and functions. Some inefficient code. | Comment clearly describe process. Appropriate names for variables, parameters and functions. Easy to follow code flow. Concise code. |

**Artistic Style**

|  |  |  |
| --- | --- | --- |
| 1 | 3 | 5 |
| Simple design not reflective of time frame allotted for project. Color usage does not support design. Random patterns | Generally appealing design. Colors and patterns support design. | Design covers entire screen. Clever use of colors to enhance design. Interesting patterns brought about by well thought out code. |