Scribble Mania Project Proposal

For my final term project Scribble Mania, I want to make a game that has similar design to “brain it on”. Essentially, player is asked to use mouse to draw certain shapes on the canvas that will complete the task being asked at that level. For example, there may be a cup with objects in it and your task is to get the object out of the cup without directly touching the cup, instead by drawing something that will possibly tip the cup over and get the object out of the cup. This game involves a lot of thinking, mathematics, geometry, physics, logic and creativity. It is very educational, interactive, fun way to learn and relax. And there are always many solutions to one problem.

For the graphics:

1. I’m going to use pygame because the graphics in this game is not very heavy and pygame will give me the ability to make a drawing panel for player to draw his or her own shapes. Pygame will also give me the ability to easily switch from mode to mode and from screen to screen. Also, pygame has a lot of built in features that will facilitate my development of the game for example, the built-in sprite function that checks the collision of two objects. The following list will be heavily relied on because this game will constantly update the interaction of two or multiple objects.

pygame.sprite.spritecollide — Find sprites in a group that intersect another sprite.

pygame.sprite.collide\_rect — Collision detection between two sprites, using rects.

pygame.sprite.collide\_rect\_ratio — Collision detection between two sprites, using rects scaled to a ratio.

pygame.sprite.collide\_circle — Collision detection between two sprites, using circles.

pygame.sprite.collide\_circle\_ratio — Collision detection between two sprites, using circles scaled to a ratio.

pygame.sprite.collide\_mask — Collision detection between two sprites, using masks.

pygame.sprite.groupcollide — Find all sprites that collide between two groups.

1. The main game window is going to be really simple. It’s going to be a canvas that player can draw stuff on and the task in the canvas. There will be buttons on the side that allows player to look for hints, restart the level or select levels. There will also be an indicator of time spent to solve the current level, number of shapes drawn to solve the current level.

The game will keep track of the time spent on finishing the task and the number of shapes drawn and the system will give player a score of performance based upon those two criteria.

I’d have to start designing the levels and tasks. This is the most important part of the game. Some good levels require really good deep thinking and it might appear to be impossible to pass at first but there are certain ways where one can think of in order to pass.

For the math and physics part of this game:

1. I have to account for gravity, acceleration, F=ma, friction, and conservation of momentum, center of mass and projectile motions
   1. For gravity: every time when the player draw something that does not touch the bottom of the canvas will experience a free fall until it reaches the bottom
   2. For acceleration, I’ll calculate the acceleration of moving particles if it experience a net force. For angular acceleration, I’ll have to calculate the tangential acceleration.
   3. For friction, when two objects get in contact, we should account for the friction between surfaces, even non-regular surfaces, which require us to use differential calculus
   4. For conservation of momentum and conservation of energy, it allow us to calculate the motion of an object after collision for example.
   5. For center of mass, this is probably the most important piece of physics involved that will facilitate players’ thinking into reality. Not every shape drawn in canvas has the same weight, density, dimensions and center of mass. Therefore, it will react with things around it differently.
   6. The projectile motions are important as well because there are a lot of gravity going on hence projectile motion will be present a lot.
2. For math: the calculation of speed, acceleration, impulse, and many more

For further functions:

◆ Replenish with dozens more brain busting puzzles and user has the ability to customize his or her own level   
◆ Compete with your friends online for this game, which requires server connection.

◆You can also share your unique solution with your friends.