Design Overview for <<Multi Tank >>

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Summary of Program

Describe what you want the program to do… one or two paragraphs.

Include a sketch of sample output to illustrate your idea.

My program is a 2-player tank shooting game called “Multi Tank”. Each player will have to defeat each other by shooting bullets or using items. Each player can fire a maximum of 5 bullets appearing on the screen at the same time. After each match, the score is shown to the players.

There are 4 items, and each item has a duration of effect:
+ Speed Boost: Boost the player’s speed
+ Fast Bullet: Increase the bullets’ speed
+ Mini Gun: Increase the player’s maximum bullet to unlimited
+ Mystery Box: Get a random item from the 3 items above

There are a total of 4 screens: start screen, how-to-play screen, game screen, and score screen.

Required Roles

Describe each of the classes, interfaces, and any enumerations you will create. Use a different table to describe each role you will have, using the following table templates.

Table 1: <<Player(abstract)>> details

Responsibility	Type Details	Notes
_x, _y	protected, double	Position
_angle: double	protected, double	
_forwardspeed, _backwardspeed	protected, double	
_rotation speed	private, double	
_maxammo	protected, int	
_score	protected, int	
_tankImage	protected, Bitmap	
_ammo	protected, List<Bullet>	
_items	protected, List<Item>	
_dead	protected, bool	Check status of player
Player()	public	Constructor
RotateRight()	public, void	
RotateLeft()	public, void	

UseItem()	public, void	
Shoot()	public, void	
Control()	public, void	
Hit()	public, void	
Draw()	public, void, abstract	
Ammo : List<Bullet>	public, readonly property	
Items: List<Item>	public, readonly property	
getImage: Bitmap	public, readonly property	
Deafeat: bool	public, property	
Score: int	public, property	
X: double	public, property	
Y: double	public, property	
MaxAmmo: int	public, property	
ForwardSpeed: double	public, property	
BackwardSpeed: double	public, property	

Table 2: <<Player1>> details

Responsibility	Type Details	Notes
Player1()	public	Constructor
Draw()	public, void	
Control()	public, void	

Table 3: <<Player2>> details

Responsibility	Type Details	Notes
Player2()	public	Constructor
Draw()	public, void	
Control()	public, void	

Table 4: <<Bullet>> details

Responsibility	Type Details	Notes
_x, _y	private, double	Position
_speed	private, double	
_angle	private, double	
_bulletImage	private, Bitmap	
Bullet(double x, double y, double angle)	public	Constructor
Move()	public, void	
Draw()	public, void	
getImg: Bitmap	public, readonly property	
Speed: double	public, property	
X: double	public, property	
Y: double	public, property	

Table 5: <<Item(abstract)>> details

Responsibility	Type Details	Notes
_x, _y	private, double	Position
_ItemImg	protected, Bitmap	
_duration	protected, int	
_bulletImage	private, Bitmap	
Item(double x, double y)	public	Constructor
DrawOutline()	public, void	
Draw()	public, void	
Effect(Player p)	public, void, abstract	
ReverseEffect(Player p)	public, void, abstract	
getImg: Bitmap	public, readonly property	
Duration: int	public, property	
X: double	public, property	
Y: double	public, property	

Table 6: <<CollisionHandler>> details

Responsibility	Type Details	Notes
+ CollisionHandler()	public	Constructor
CheckCollision(Player p1, Player p2, List<Item> items)	public, void	
CheckBulletHit(Player p1, Player p2)	public, void	
CheckItemCollision(Player p, List<Item> items>	public, void	
CheckBulletOutOfScreen(Player p)	public, void	
CheckItemOutOfScreen(Player p)	public, void	

Table 7: <<Page>> details

Responsibility	Type Details	Notes
_background	protected, Bitmap	
_duration	protected, int	
+ Page()	public	Constructor
Draw()	public, void, virtual	
ButtonClicked(double x, double y)	public, void, virtual	
Duration: int	public, property	

Table 8: <<GameScreenManager>> details

Responsibility	Type Details	Notes
_currentscreen	private, Page	The current screen of the game
+ GameScreenManager(Page screen)	public	Constructor
ChangeScreen(double x, double y, Player p1, Player p2) :	public, void	
Draw()	public, void	
getPage : Page	public, readonly property	

Table 9: <ExtensionMethod(static)>> details

Responsibility	Type Details	Notes
ToRadian(double number)	public, double, static	This functions converts degree to radian

Table 10: <ScreenSize(sealed)>> details

Responsibility	Type Details	Notes
size	private, ScreenSize, readonly, static	The only instance of the class
ScreenSize()	internal, static	
ScreenSize()	private	Constructor
Size: ScreenSize	public, readonly, static, property	
WIDTH	public, const int	
HEIGHT	public, const int	

Table 11: <MultiTank>> details

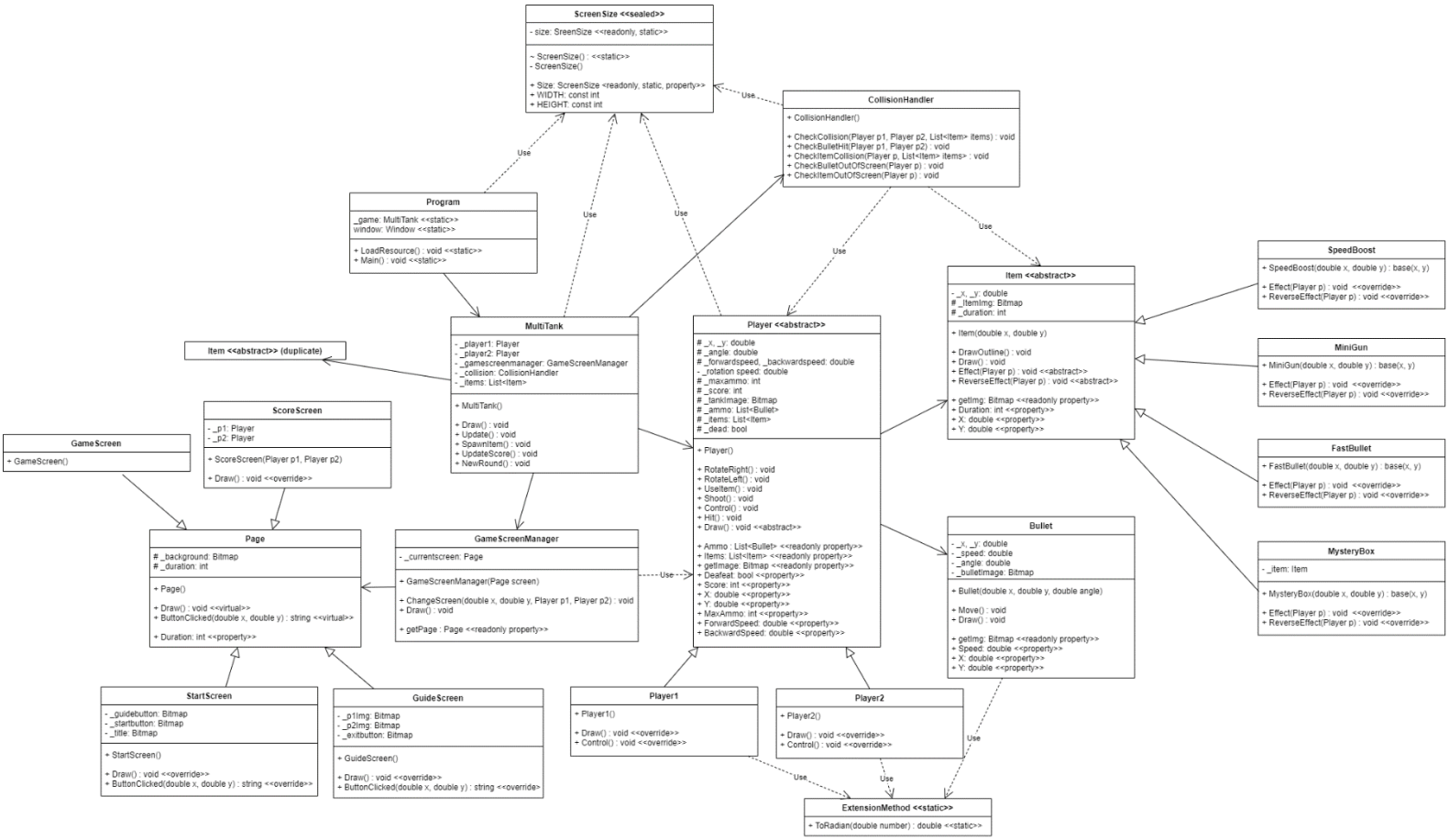
Responsibility	Type Details	Notes
_player1	private, player	
_player2	private, player	
_gamescreenmanager	private, GameScreenManager	
_collision	private, CollisionHandler	
_items	private, List<Item>	
+ MultiTank()	public	Constructor
Draw()	public, void	
Update()	public, void	
SpawnItem()	public, void	
UpdateScore()	public, void	
NewRound()	public, void	

Table 12: <Program(static)>> details

Responsibility	Type Details	Notes
_game	MultiTank, static	
window	Window, static	
LoadResource()	public, void, static	Load game images
Main()	public, void, static	Execute game

Class Diagram

Provide an initial design for your program in the form of a class diagram.



Sequence Diagram

Provide a sequence diagram showing how your proposed classes will interact to achieve a specific piece of functionality in your program.