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Space Quest - A Math-Based Learning RPG

Main Function

```
type Main.m

close all; clear all; clc; % Closes all the garbage

Play = PlayerBuild; % Create player
story = 'Introduction'; % Always start With introduction

while story ~= 0
    GamePlay(Play, story); % Play story

    story = StorySelection(InDir()); % Take story from selection
function
end
```

Player Build - Player Class Constructor

```
type PlayerBuild.m

function A = PlayerBuild()

% Constructor for player class

A = Player;
A.Name = input('What is your name? \n','s'); % Player input name
A.Health = 100;
A.Alive = 1; % See player class
```

end

Alien Build - Enemy Class Constructor

type *AlienBuild.m*

function A = AlienBuild()

*A = Alien; % Name is unimportant
A.Health = randi([80 100]); % Randomly generated amount
A.Alive = 1; % Is alive upon construction*

end

InDir() - File Directory Aggregator

type *InDir.m*

function [files] = InDir()

*% This function finds the .txt files in the directory, puts it into a
cell
array, then slices the string to remove the .txt file and puts it
into a
new cell so that the player can pick which one they want to play.*

clc;

*base = dir; % load the directory structure
i = 1;*

*while i <= length(base)
 file = strsplit(base(i).name, '.'); % split every file by the
 period
 if strcmp(file(2), 'txt') == 0 % Remove cell if it isn't a txt
 file
 base(i) = [];
 else
 files(i) = file(1); % put it in the returned cell array
 i = i + 1;
 end
end*

end

StorySelection(files) - Story Selector from Available Files

type *StorySelection.m*

```

function [ option ] = StorySelection(files)

% This function takes the list of files, generated from InDir (see
% Main.m)
% In this instantiation of it, we're just taking that list, and
% creating a
% pseudo-GUI which allows the player to see what quests and stories
% are
% available to play.

list_of_files = files;
num_of_files = length(list_of_files);

fprintf('List of Aventures:\n')
fprintf('0) Quit Game\n')
for i=1:num_of_files
    str = list_of_files{i};
    str = strrep(str, '_', ' '); % replace '_' with spaces
    if strcmp(str,'Introduction') % if introduction
        list_of_files{i} = []; % removes introduction cell
        i = i - 1; % de-iterates to adjust for removed item
        num_of_files = num_of_files - 1; % necessary for later
    else
        fprintf('%i) %s\n', i, str);
    end
end
end

selection = input('\nWhich Adventure Would You Like to Play?\n');

% This portion of the code makes sure that the input is valid from 0
% to the
% number of files. 0 is reserved for quitting.
while selection > num_of_files || selection < 0
    fprintf('Sorry! That''s not a valid selection, please enter a
    number between 0 and %i\n', num_of_files)
    selection = input('Which Adventure Would You Like to Play?\n');
end
clc;

if selection == 0
    option = 0; % Returns quit variable
else
    option = list_of_files{selection}; % Returns selection index from
    list
end
end
end

```

GamePlay(player,story) - Game Play "Engine"

type `GamePlay.m`

```
function Gameplay(player,story)
    x = 0;
    name = player.Name; %passes name

    StoryTeller(name, story); % Reads from txt file 'story'

    % The following loop will take the name of the story, find the indice
    % of the second underscore and chop it off and move back one so we
    % could
    % get to the appropriate .m file.

    if length(story) > 17
        for i=1:length(story)
            if strcmp(story(i),'_') == 1
                x = x + 1;
            end
            if x == 2
                story = story(1:i-1);
                x = x + 1;
                break;
            end
        end
    end

    story = strcat(story,'(player)'); % Attaches player argument to
    string
    eval(story) % Evalutes the .m file

end
```

StoryTeller(name,File_string) - Text/File Parser

type `StoryTeller.m`

```
function StoryTeller(Name,file_string)

% This function takes the story passed into it as a string, appends
the
% .txt to the name, and then opens, and reads the file off until it's
empty
% or ESCAPE SEQUENCE is written in the file. It compares strings with
% various phrases that achieve specific functions.

clc;

file_string = strcat(file_string,'.txt');
File = fopen(file_string,'r');
```

```

x = fgetl(File);
n = 0; % Dramatic Variable

while x ~= -1
    if strcmp(x,'ESCAPE SEQUENCE') % Clears screen and breaks the
function
        x = fgetl(File);
        clc;
        break;
    end
    if strcmp(x,'CLEAR SCREEN') % Clears screen, continues reading
        x = fgetl(File);
        clc;
    end
    if strncmp(x,'PAUSE',5) % Pauses the function
        if x(7) == ' ' % If blank, wait for user input
            pause()
        else
            pause(str2double(x(7))) % If number, wait that long
        end
        x = ' '; % Unprintable line
    end
    if strncmp(x,'DRAMATIC',8) % Dramatic pauses
        if x(10) == ' ' % If blank, just do it for 3 iterations
            n = 3;
        else % number of iterations
            n = str2double(x(10));
        end
        x = ' '; % Unprintable line
    end
end

% Replace Name in String
x = strrep(x,'NAME',Name);

% Print Out %
if strcmp(x, ' ') ~= 1 % If string isn't empty
    fprintf(x)
    fprintf('\n')
    x = fgetl(File);
else % If string is empty
    x = fgetl(File);
end

% Dramatic Pause
if n ~= 0
    pause(1)
    n = n - 1;
else
    pause(0)
end
end
end

```

BASIC_ADDITION(player) - Addition Module

type BASIC_ADDITION.m

```
function BASIC_ADDITION(player)
    AliensDefeated = 0;

    while AliensDefeated < 5
        enemy = AlienBuild; % Build enemy
        fprintf('The alien has detected your presence and wishes
to make battle!\n')

        while enemy.Health > 0
            x = randi([1 25]);
            y = randi([1 25]);
            z = x + y; % Answer

            fprintf('The alien calls out to you:\n\n')

            fprintf('What is %i + %i equal to?\n\n',x,y)
            fprintf('Alien Health: %i\n', enemy.Health)
            fprintf('Your Health: %i\n', player.Health)
            answer = input('What is your response?!\n');
            while isinteger(answer) ~= 0
                fprintf('The answer you provided is not a valid
response.\n')

                fprintf('Please enter an integer.\n')
                answer = input('What is your response?!\n');
            end
            while answer ~= z % Damage Done To You
                dmg = abs(answer - z);
                player.Health = player.Health - dmg;
                fprintf('\nYou are incorrect and the alien attacks
you!\n')

                fprintf('You lose %i health points!\n', dmg)
                player = player.CheckAlive(); % Check if alive
                if player.Alive == 0 % If defeated, break game
                    fprintf('You have been defeated!\n')
                    fprintf('But not for long! Please review your
notes\n')

                    fprintf('And come back and try to save the
ship again!\n\n')

                    player.Health = 100; % Reset health
                    pause()
                    return;
                end
                % if not dead, you get to try again!
                fprintf('What is %i + %i equal to?\n\n',x,y)
                fprintf('Alien Health: %i\n', enemy.Health)
                fprintf('Your Health: %i\n', player.Health)
                answer = input('What is your response?!\n');
            end
        end
    end
end
```

```

        if answer == z % Damage to Alien
            dmg = randi([25 50]); % Randomly generated
            enemy.Health = enemy.Health - dmg;
            fprintf('\nYou are correct and successfully attack
the alien.\n')
            fprintf('It loses %i health points!\n\n', dmg)
            enemy = enemy.CheckAlive(); % check if alive
        end
        if enemy.Alive == 0 % if defeated
            AliensDefeated = AliensDefeated + 1;
            fprintf('You have defeated the alien!\n')
            fprintf('However there are still %i more to be
defeated!\n\n', 5-AliensDefeated)
        end
    end
end
fprintf('You have successfully defeated all of the aliens!\n')
fprintf('Great job!\n')
pause()
end

```

BASIC_SUBTRACTION(player) - Subtraction Module

type BASIC_SUBTRACTION.m

```

function BASIC_SUBTRACTION(player)
    AliensDefeated = 0;

    while AliensDefeated < 5
        enemy = AlienBuild;
        fprintf('The alien has detected your presence and wishes
to make battle!\n')

        while enemy.Health > 0
            x = randi([2 25]);
            y = randi([1 25]);
            while y > x
                y = randi([1 25]); % Prevents negative answers
            end
            z = x - y; % Answer

            fprintf('The alien calls out to you:\n\n')

            fprintf('What is %i - %i equal to?\n\n', x, y)
            fprintf('Alien Health: %i\n', enemy.Health)
            fprintf('Your Health: %i\n', player.Health)
            answer = input('What is your response?!\n');
            while isinteger(answer) ~= 0
                fprintf('The answer you provided is not a valid
response.\n')
            end
        end
    end
end

```

```

        fprintf('Please enter an integer.\n')
        answer = input('What is your response?!\n');
    end
    while answer ~= z % Damage to Player
        dmg = abs(answer - z); % Difference in answers
        player.Health = player.Health - dmg;
        fprintf('\nYou are incorrect and the alien attacks
you!\n')

        fprintf('You lose %i health points!\n', dmg)
        player = player.CheckAlive(); % Check if alive
        if player.Alive == 0 % If defeated, break game
            fprintf('You have been defeated!\n')
            fprintf('But not for long! Please review your
notes\n')

            fprintf('And come back and try to save the
ship again!\n\n')

            player.Health = 100; % reset health
            pause()
            return;
        end

        fprintf('What is %i - %i equal to?\n\n',x,y)
        fprintf('Alien Health: %i\n', enemy.Health)
        fprintf('Your Health: %i\n', player.Health)
        answer = input('What is your response?!\n');
    end
    if answer == z % Damage to Enemy
        dmg = randi([25 50]); % Randomly Generated
        enemy.Health = enemy.Health - dmg;
        fprintf('\nYou are correct and successfully attack
the alien.\n')

        fprintf('It loses %i health points!\n\n', dmg)
        enemy = enemy.CheckAlive(); % check if alive
    end
    if enemy.Alive == 0 % Alien Defeated
        AliensDefeated = AliensDefeated + 1;
        fprintf('You have defeated the alien!\n')
        fprintf('However there are still %i more to be
defeated!\n\n', 5-AliensDefeated)
    end
end
end
    fprintf('You have successfully defeated all of the aliens!\n')
    fprintf('Great job!')
    pause()
end

```

Introduction.txt - Introduction Story

type `Introduction.txt`

Greetings Agent NAME,

Welcome to the SS Athematica! As an exciting new recruit on this fine vessel,
we hope you'll find your accomodations and role to your expectations.

As was
mentioned in your orientation pamphlet, for your probationary period,
your
accomodations will be in sub-basement CL-3, room #718 and you will
report to
your section on Monday at 0400 hours for your orientation as your
exciting
new position as a Janitorial Services Intern. If you have any
questions,
please feel free to never ask anyone.

Once again, welcome to the SS Athematica,

<Enter Agent Name Here>

PAUSE

DRAMATIC 4

This message will destruct in 3...

2...

1...

CLEAR SCREEN

Your name is NAME. You've spent the last 5 months travelling with the
SS Athematica.

You've worked hard and long to be promoted from Janitorial Services
Intern,
to Janitorial Services Staff, to Janitorial Services Supervisor. When
they say

"We run a clean ship", they mean it.

PAUSE 3

Today is Monday, your 6-month anniversary with the SS Athematica.

Today is the proudest
day of your life. Today, you become the LEAD HEAD JANITORIAL SERVICES
EXPERT. As you walk to your
ceremony, where the Regional Assistant to the Vice Capatain of
Operations Management will
award you with the fanciest award on the ship, the Golden Toilet
Sponge, THE ALARM GOES OFF!

The whole ship begins to panic. In the chaos, the captain announces
over the loud speaker,

PAUSE 3

"Attention Crew, we're are being attacked by an advanced alien race
who are invincible to even
our strongest weapons. We have found their one true weakness but it's
too late. Their weakness
is...

DRAMATIC 5

.
.

.
Math."
ESCAPE SEQUENCE

BASIC_ADDITION....txt - Basic Addition Story

type BASIC_ADDITION_-_THE_QUEST_TO_ADD_THEM_ALL!!!!.txt

*As you, NAME, traverse slowly and steadily towards the Captain's Deck,
you see an alien! You see a '+' marked on his chest, signifying its participation in the summation corps of the alien army.*

'Addition!', you think to yourself. 'That's baby stuff'

As you make your way trying to avoid an alien encounter, you are spotted!

PAUSE
ESCAPE SEQUENCE

BASIC_SUBTRACTION...txt - Basic Subtraction Story

type BASIC_SUBTRACTION_-_QUEST_OF_DIFFERENCE.txt

*As you, NAME, traverse slowly and steadily towards the Captain's Deck,
you see an alien! You see a '-' marked on his chest, signifying its participation in the difference corps of the alien army.*

'Subtraction!', you think to yourself. 'That's baby stuff'

As you make your way trying to avoid an alien encounter, you are spotted!

PAUSE
ESCAPE SEQUENCE

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