

Trivia Game 2.0

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CIS – 5
Program Logic with C++
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I. Introduction

A Trivia Game is a way to test one's knowledge amount one topic or various topics. They are incredibly customizable in terms of questions, point calculation, etc. For this game, I decided to incorporate National Aeronautics and Space Administration-related trivia questions. Each correct question resulted in an addition of 100 points. Each incorrect question resulted in a 50 point deduction. The score would be output after each question while also showing the user if their answer was correct or incorrect. The correct or incorrect variable is then incorreced depending on their answer. If the bonus round is not initiated, the user immediately sees the game solution read in from a file.

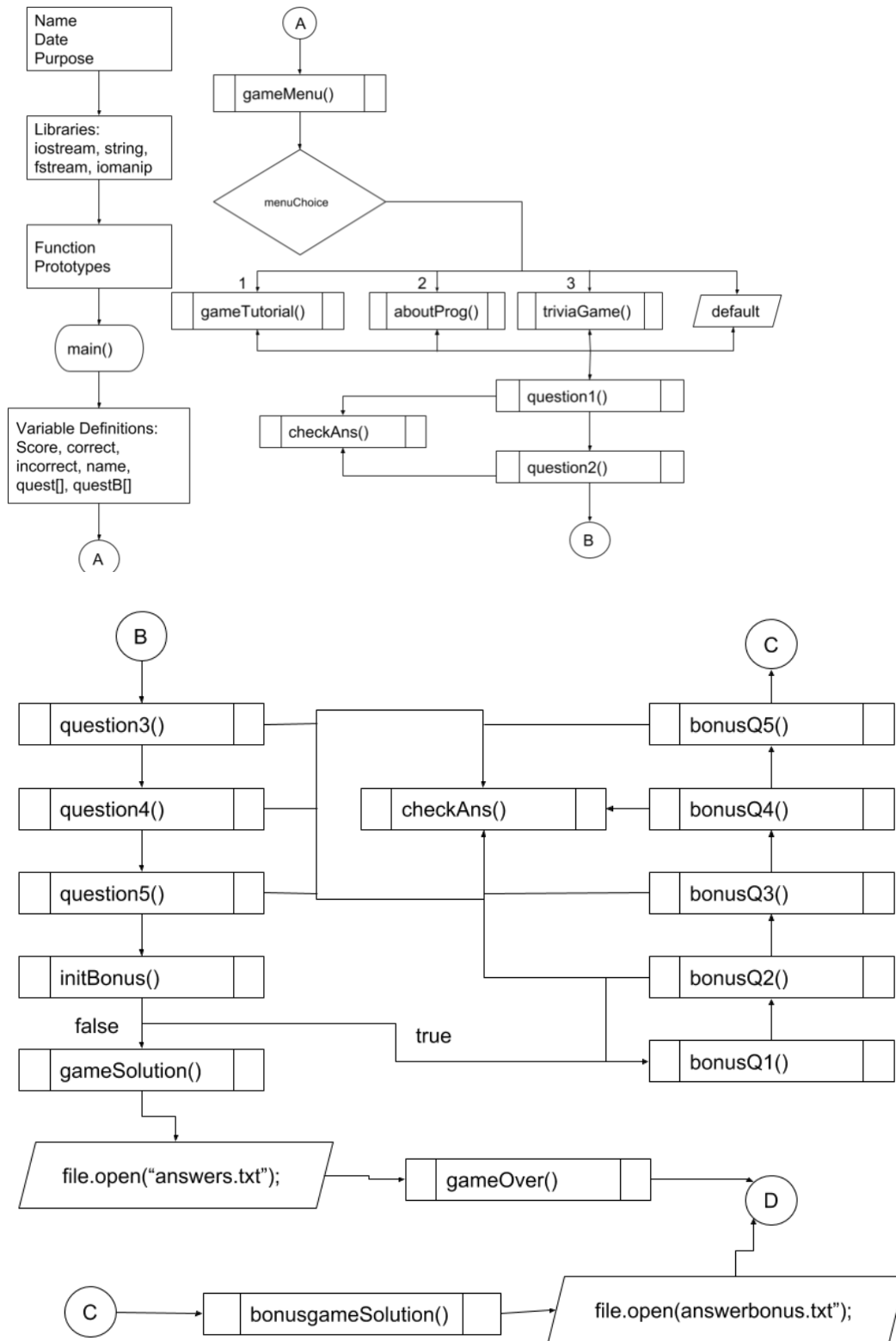
In order to initiate the bonus round, the user must have a score of at least 400 points, or have answered 4 questions right. The bonus round of 5 questions in then initiated. The same mathematical equations are applied to the bonus questions. Once the bonus round is completed, the user is then shown all the answers from the regular questions and the bonus questions. However, the score and percentage calculations are different depending on the number of questions answered. In order to account for this difference, the number of incorrect questions and correct questions are added for the correct percentage calculation.

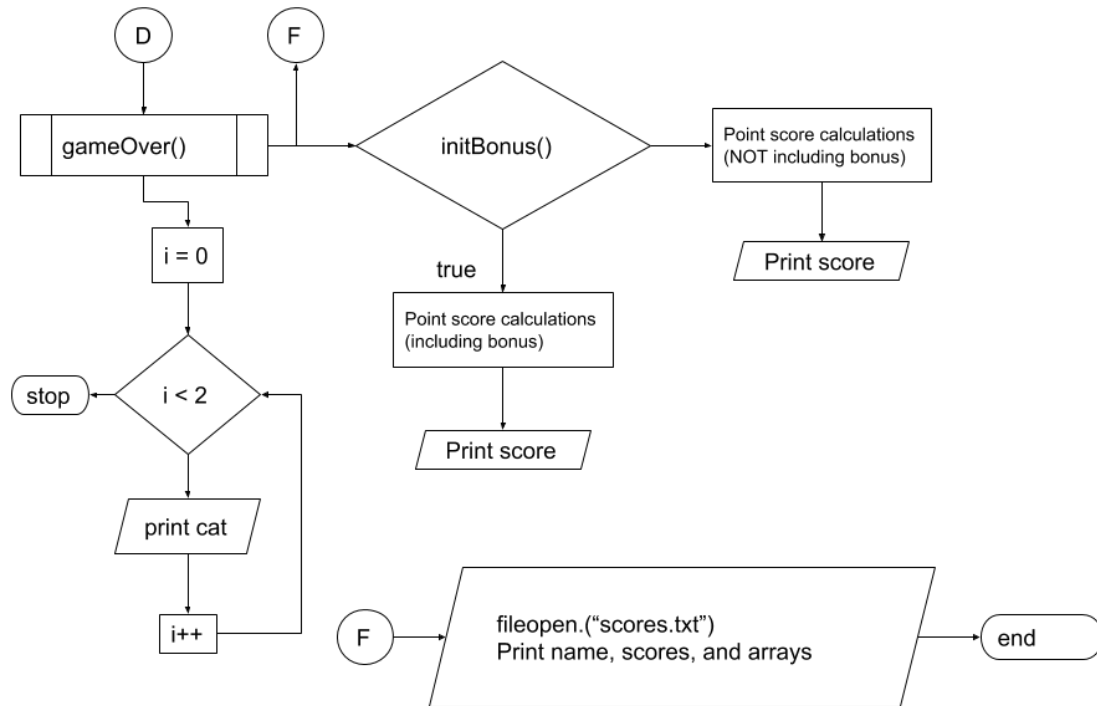
The user then sees their score, the total correct questions, and the total correct questions percentage. The user's name and final score is also output into a separate file.

II. Modifications from 1.0

The majority of code modifications were about utilizing space more efficiently in terms of the game's visuals. The program shrunk from just over 600 to over 400 lines of code. Repetitive functions were condensed and the questions were moved into separate arrays.

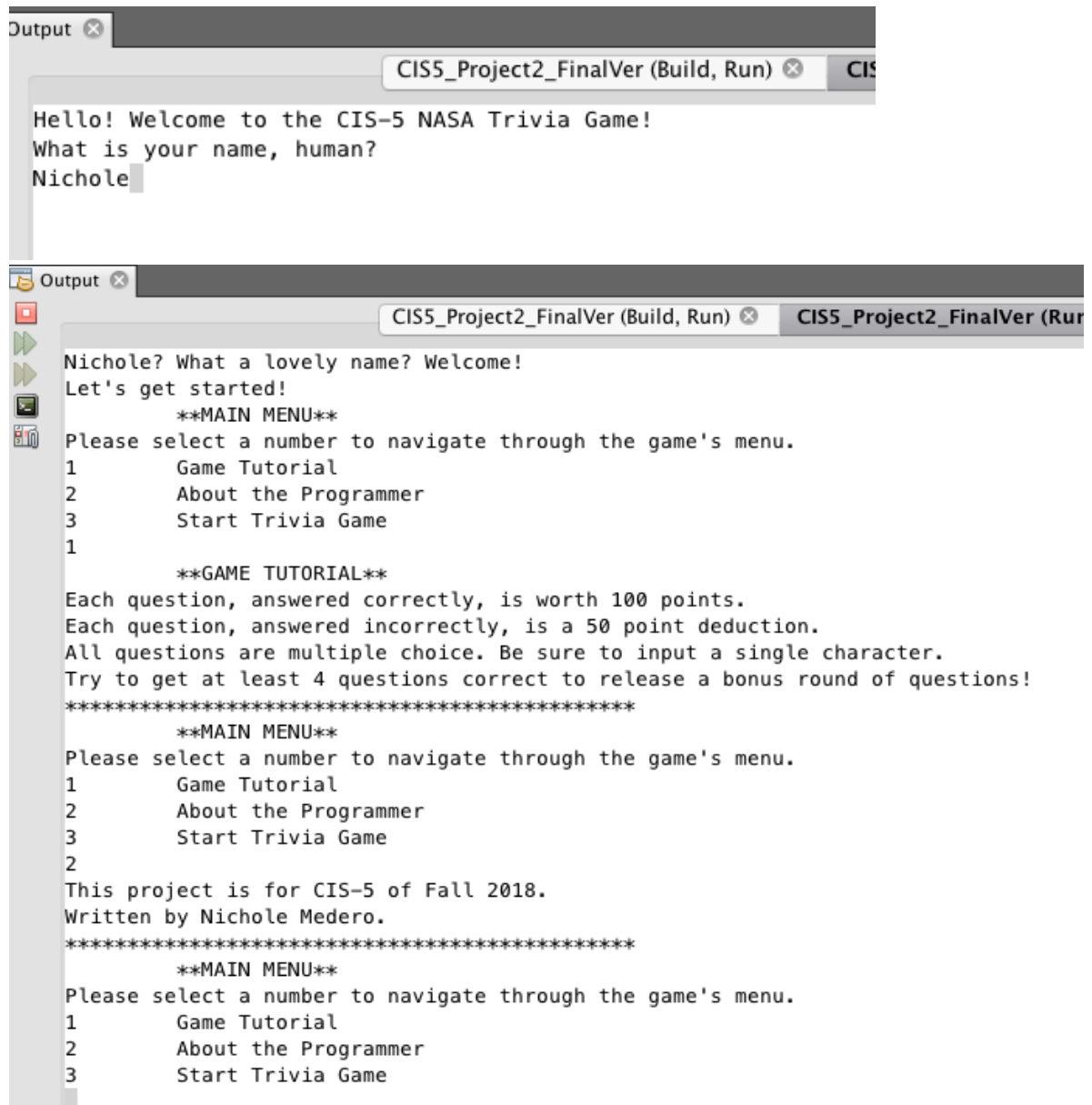
III. Flowchart





IV. Program Screenshots

No bonus round view:



```
Output x
CIS5_Project2_FinalVer (Build, Run) x CIS

Hello! Welcome to the CIS-5 NASA Trivia Game!
What is your name, human?
Nichole

Output x
CIS5_Project2_FinalVer (Build, Run) x CIS5_Project2_FinalVer (Run)

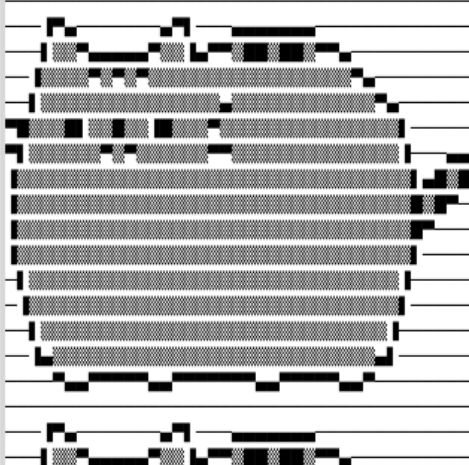
Nichole? What a lovely name? Welcome!
Let's get started!
**MAIN MENU**
Please select a number to navigate through the game's menu.
1      Game Tutorial
2      About the Programmer
3      Start Trivia Game
1

**GAME TUTORIAL**
Each question, answered correctly, is worth 100 points.
Each question, answered incorrectly, is a 50 point deduction.
All questions are multiple choice. Be sure to input a single character.
Try to get at least 4 questions correct to release a bonus round of questions!
*****
**MAIN MENU**
Please select a number to navigate through the game's menu.
1      Game Tutorial
2      About the Programmer
3      Start Trivia Game
2

This project is for CIS-5 of Fall 2018.
Written by Nichole Medero.
*****
**MAIN MENU**
Please select a number to navigate through the game's menu.
1      Game Tutorial
2      About the Programmer
3      Start Trivia Game
```

```

CIS5_Project2_FinalVer (Build, Run)  CIS5_Project2_FinalVer (Run)
3
*****
Who made the first U.S. spacewalk?
a. Ed White      b. Nichole Medero      c. You      d. None of the above
a
Correct answer!
Your score is now 100!
*****
What is the name of the largest volcano in the solar system?
a. Mount St. Helens      b. Olympus Mons      c. Krakatoa      d. Kotopaxi
b
Correct answer!
Your score is now 200!
*****
Who was the first American woman in space?
a. Sally Ride      b. Nichole Medero      c. nichole medero      d. NiCh0lE mEdEr0
a
Correct answer!
Your score is now 300!
*****
What is the smallest planet in our solar system?
a. Earth      b. Mars      c. Mercury      d. Neptune
b
Incorrect answer!
Your score is now 250.
*****
What is the longest time a human has been sent to space?
a. 3 weeks      b. 437 days      c. 9 months      d. 3 years
a
Output
CIS5_Project2_FinalVer (Build, Run)  CIS5_Project2_FinalVer (Run)
Incorrect answer!
Your score is now 200.
*****
GAME SOLUTION
a
b
a
c
b
-----CONGRATULATIONS-----
  
```



```

Woo! Pusheen the Cat is happy that you have completed the game, Nichole!
Your final score: 200
You answered 3 questions out of 5!
Or 60% of the questions.

```

Bonus round view:

```

*****
          BONUS ROUND INITIALIZED:
How many moons are in our solar system?
a. 1      b. 10     c. 181      d. 300
1
Incorrect answer!
Your score is now 450.
*****
What is the largest planet in our solar system?
a. Mercury      b. Uranus      c. Jupiter      d. Venus
c
Correct answer!
Your score is now 550!
*****
How many people have walked on the moon?
a. 2      b. 1      c. 12      d. 6
c
Correct answer!
Your score is now 650!
*****
What was America's first space station called?
a. Spacelab      b. NASA      c. Skylab      d. None of the above
c
Correct answer!
Your score is now 750!
*****
How long does it take for the space shuttle to orbit Earth?
a. 1 day      b. 12 hours      c. 60 minutes      d. 5 hour
c
Correct answer!
Your score is now 850!
*****
          GAME SOLUTION
a
b
a
c
b
-----BONUS-----
c
c
c
c
c

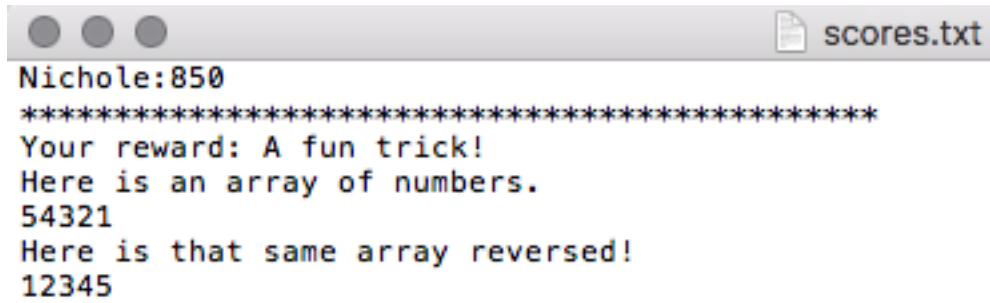
```

```

Woo! Pusheen the Cat is happy that you have completed the game, Nichole!
Your final score: 850
You answered 9 questions out of 10!
Or 90% of the questions.

```

Output to file:

A screenshot of a terminal window with a title bar containing three window control buttons and the filename 'scores.txt'. The terminal displays the following text:

```
Nichole:850
*****
Your reward: A fun trick!
Here is an array of numbers.
54321
Here is that same array reversed!
12345
```

Check Off Sheet:

Cross Reference from Project 1

You are to fill-in with where located in code

Chapter	Section	Topic	Where Line #'s	Pts	Notes
2	2	cout	63...		
	3	libraries	22-26	5	iostream, iomanip, cmath, cstdlib, fstream, string, ctime
	4	variables/literals	58-61...		No variables in global area, failed project!
	5	Identifiers			
	6	Integers	58-60...	1	
	7	Characters	165-166...	1	
	8	Strings	61	1	
	9	Floats No Doubles	425	1	Using doubles will fail the project, floats OK!
	10	Bools	49...	1	
	11	Sizeof *****			
	12	Variables 7 characters or less			All variables <= 7 characters
	13	Scope ***** No Global Variables			
	14	Arithmetic operators	151...		
	15	Comments 20%+		2	Model as pseudo code
	16	Named Constants			All Local, only Conversions/Physics/Math in Global area
	17	Programming Style ***** Emulate			Emulate style in book/in class repository
3	1	cin	171...		
	2	Math Expression	156...		
	3	Mixing data types ****			
	4	Overflow/Underflow ****			
	5	Type Casting	427...	1	
	6	Multiple assignment *****			
	7	Formatting output	169...	1	
	8	Strings		1	
	9	Math Library		1	All libraries included have to be used
	10	Hand tracing *****			
4	1	Relational Operators			
	2	if		1	Independent if
	4	if-else	149...	1	
	5	Nesting		1	
	6	if-else-if		1	
	7	Flags *****			
	8	Logical operators		1	
	11	Validating user input	68	1	
	13	Conditional Operator		1	
	14	Switch	104	1	
5	1	Increment/Decrement	153...	1	
	2	While		1	
	5	Do-while		1	
	6	For loop	67...	1	
	11	Files input/output both	367, 439	2	
	12	No breaks in loops *****			Failed Project if included
***** Not required to show			Total	30	

Cross Reference for Project 2

You are to fill-in with where located in code

Chapter	Section	Topic	Where Line #'s	Pts	Notes
6		Functions			
	3	Function Prototypes	31-54	4	Always use prototypes
	5	Pass by Value	173...	4	
	8	return	161	4	A value from a function
	9	returning boolean	161	4	
	10	Global Variables		XXX	Do not use global variables -100 pts
	11	static variables		4	
	12	defaulted arguments		4	
	13	pass by reference	31-54	4	
	14	overloading		5	
	15	exit() function		4	
7		Arrays			
	1 to 6	Single Dimensioned Arrays	72-82	3	
	7	Parallel Arrays		2	
	8	Single Dimensioned as Function Arguments	174...	2	
	9	2 Dimensioned Arrays		2	Emulate style in book/in class repository
	12	STL Vectors		2	
		Passing Arrays to and from Functions	174...	5	
		Passing Vectors to and from Functions		5	
8		Searching and Sorting Arrays	451-456		
	3	Bubble Sort		4	
	3	Selection Sort		4	
	1	Linear or Binary Search		4	
***** Not required to show			Total	70	Other 30 points from Proj 1 first sheet tab

V. Code

```

/*
 * File: triviagame8.cpp
 * Author: Nichole Medero
 * Created on December 10, 2018, 02:08 PM
 * Purpose: CIS5 Project 2 Trivia Game - Version 8
 */

/*
 *PSEUDOCODE:
 * 1. Declare Variables
 * 2. Get Player name
 * 3. Switch Statements to navigate throughout the game
 *    (e.g., main menu, tutorial, about programmer, etc(?))
 * 4. Function for output in each case of switch statement
 * 5. Trivia Game Function, display only one question while it is unanswered
 * 6. Separate function for each question (YES)
 * 7. If user's score is above X, initiate bonus questions round. (boolean function)
 * 8. Once user completes game, output solution from answers.txt input file
 * 9. Write user's name and score to scores.txt output file
 */

#include <iostream> /*library for cin cout
#include <string> /*library for string intake
#include <fstream> /*library for input/output files
#include <iomanip> /*library for setw(#)
#include <vector> /*library for vector

using namespace std;

/*Main Menu Prototypes
void gameMenu(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void gameTutorial(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void aboutProg(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void triviaGame(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
/*Trivia Question Prototypes for 5 questions
void question1(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void question2(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void question3(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void question4(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void question5(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
/*Bonus Trivia Question Prototypes for 5 Questions
bool initBonus(int score);
void bonusQ1(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void bonusQ2(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void bonusQ3(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void bonusQ4(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
void bonusQ5(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
/* Check Answer Prototype

```

```

    bool checkAns(char userA, char ans, int &score, int &correct, int &incorrect);
    /**Solutions for regular questions and bonus game questions Prototypes
    void gameSolution(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
    void bonusgameSolution(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);
    /**Game Over Screen Prototype
    void gameOver(string quest[], string questB[], int &score, int &correct, int &incorrect, string name);

    /**Program Execution Begins Here
    int main(int argc, char** argv) {
        int score = 0; /**keeps track of user's score
        int correct = 0; /**keeps track of user's correctly answered questions
        int incorrect = 0; /**keeps track of user's incorrectly answered questions
        string name; /**hold user's name

        cout<<"Hello! Welcome to the CIS-5 NASA Trivia Game!"<<endl; /**notify user of game type
        cout<<"What is your name, human?"<<endl; /**prompt user for name
        cin>>name; /**input user's name

        for (int i = 0; i < 3; i++) { /**for loop to welcome user
            cout<<name<<"? What a lovely name? Welcome!"<<endl;
        }
        cout<<"Let's get started!"<<endl;

        string quest[5] = { "Who made the first U.S. spacewalk?", //Q1
            "What is the name of the largest volcano in the solar system?", //Q2
            "Who was the first American woman in space?", //Q3
            "What is the smallest planet in our solar system?", //Q4
            "What is the longest time a human has been sent to space?" }; //Q5

        string questB[5] = { "How many moons are in our solar system?", //BQ1
            "What is the largest planet in our solar system?", //BQ2
            "How many people have walked on the moon?", //BQ3
            "What was America's first space station called?", //BQ4
            "How long does it take for the space shuttle to orbit Earth?" }; //BQ5

        gameMenu(quest, questB, score, correct, incorrect, name); /**game menu function call
        /**all other function calls are held within the preceeding functions

        /**exit game
        return 0;
    }

    void gameMenu(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) {
        /**all future functions pass by reference for score, correct, incorrect variables
        /**as they are changed within each question # function
        /**name is not passed by reference as there are no changes made to it
        int menuChoice; /**initialize variable to hold menu choice
        cout<<"\t **MAIN MENU**"<<endl;
        cout<<"Please select a number to navigate through the game's menu."<<endl;
        cout<<"1 \t Game Tutorial"<<endl;
        cout<<"2 \t About the Programmer"<<endl;
        cout<<"3 \t Start Trivia Game"<<endl;

```

```

cin>>menuChoice; /*hold's user's menu choice

switch (menuChoice) { /*switch statement for game menu
    case 1: /*tutorial case 1
        gameTutorial(question, questionB, score, correct, incorrect, name);break;
    case 2: /*about the programmer case 2
        aboutProg(question, questionB, score, correct, incorrect, name);break;
    case 3: /*initialize game case 3
        triviaGame(question, questionB, score, correct, incorrect, name);break;
    default:
        cout<<"That is not a valid menu choice."<<endl;
        /*please read the instructions and follow valid input requirements
}
}

void gameTutorial(string question[], string questionB[], int &score, int &correct, int &incorrect, string name) {
/*gameTutorial function definition
    cout<<"\t **GAME TUTORIAL **"<<endl; /*description of point calculation and requirements
    cout<<"Each question, answered correctly, is worth 100 points."<<endl;
    cout<<"Each question, answered incorrectly, is a 50 point deduction."<<endl;
    cout<<"All questions are multiple choice. Be sure to input a single character."<<endl;
    cout<<"Try to get at least 4 questions correct to release a bonus round of questions!"<<endl;
    cout<<"*****"<<endl;
    gameMenu(question, questionB, score, correct, incorrect, name);
    /*return to game menu after this case/function is called
}

void aboutProg(string question[], string questionB[], int &score, int &correct, int &incorrect, string name) {
/*aboutProg function definition
    cout<<"This project is for CIS-5 of Fall 2018."<<endl; /*project assignment date
    cout<<"Written by Nichole Medero."<<endl; /*HI, THAT'S ME :)
    cout<<"*****"<<endl;
    gameMenu(question, questionB, score, correct, incorrect, name);
    /*return to game menu after this case/ function call
}

void triviaGame(string question[], string questionB[], int &score, int &correct, int &incorrect, string name) {
/*triviaGame function definition
/*initializes the trivia game
    question1(question, questionB, score, correct, incorrect, name); /*question 1 function call
                                /*arguments passed and initialized to 0
                                /*for the first question
    /*Questions 2-10 called in the function preceeding it
}

bool checkAns(char userA, char ans, int &score, int &correct, int &incorrect) {
    bool check = true; /*variable to hold boolean value
    if(userA == ans) {
        cout<<"Correct answer!"<<endl;
        score += 100; /*increment user's score
        cout<<"Your score is now "<<score<<"!"<<endl; /*output current score
        correct++; /*number of questions answered correcting incremented
    } else {

```

```

        cout<<"Incorrect answer!"<<endl;
        score -= 50; /*decrement user's score
        cout<<"Your score is now "<<score<<". "<<endl; /*output current score
        incorrect++; /*number of questions answered incorrectly incremented
        check = false;
    }
    return check; //return variable
}

void question1(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /*question 1
definition
    char userA; /*user answer
    char ans = 'a'; /*correct answer
    cout<<"*****"<<endl;
    cout<<quest[0]<<endl; /*question 1
    cout<<"a. Ed White \t b. Nichole Medero \t c. You \t d. None of the above"; /*question 1 choices
    cout<<endl;
    cin>>userA; /*take in user's answer

    if(checkAns(userA,ans,score,correct,incorrect) == true) { /*if the user's answer is correct
        question2(quest, questB, score, correct, incorrect, name); /*question 2 function call
    } else { /*if the user's answer is incorrect
        question2(quest, questB, score, correct, incorrect, name); /*question 2 function call
    }
}

void question2(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /*question 2
definition
    char userA; /*user answer
    char ans = 'b'; /*correct answer
    cout<<"*****"<<endl;
    cout<<quest[1]<<endl; /*question 2
    cout<<"a. Mount St. Helens \t b. Olympus Mons \t c. Krakatoa \t d. Kotopaxi"<<endl; /*question 2 choices
    cin>>userA; /*take in user's answer

    if(checkAns(userA,ans,score,correct,incorrect) == true) { /*if the user's answer is correct
        question3(quest, questB, score, correct, incorrect, name); /*question 3 function call
    } else { /*if the user's answer is incorrect
        question3(quest, questB, score, correct, incorrect, name); /*question 3 function call
    }
}

void question3(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /*question 3
definition
    char userA; /*user answer
    char ans = 'a'; /*correct answer
    cout<<"*****"<<endl;
    cout<<quest[2]<<endl; /*question 3
    cout<<"a. Sally Ride \t b. Nichole Medero \t c. nichole medero \t d. NiChOlE mEdErO"<<endl; /*question 3
choices
    cin>>userA; /*take in the user's answer

    if(checkAns(userA,ans,score,correct,incorrect) == true) { /*if the user's answer is correct

```

```

        question4(quest, questB, score, correct, incorrect, name); /*question 4 function call
    } else { /*if the user's answer is incorrect
        question4(quest, questB, score, correct, incorrect, name); /*question 4 function call
    }
}

void question4(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /*question 4
definition
    char userA; /*user answer
    char ans = 'c'; /*correct answer
    cout<<"*****"<<endl;
    cout<<quest[3]<<endl; /*question 4
    cout<<"a. Earth \t b. Mars \t c. Mercury \t d. Neptune"<<endl; /*question 4 choices
    cin>>userA; /*take in user's choice

    if(checkAns(userA,ans,score,correct,incorrect) == true) { /*if the user's answer is correct
        question5(quest, questB, score, correct, incorrect, name); /*question 5 function call
    } else { /*if the user's answer is incorrect
        question5(quest, questB, score, correct, incorrect, name); /*question 5 function call
    }
}

void question5(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /*question 5
definition
    char userA; /*user answer
    char ans = 'b'; /*correct answer
    cout<<"*****"<<endl;
    cout<<quest[4]<<endl; /*question 5
    cout<<"a. 3 weeks \t b. 437 days \t c. 9 months \t d. 3 years"<<endl; /*question 5 choices
    cin>>userA; /*take in user answer

    checkAns(userA,ans,score,correct,incorrect);

    initBonus(score); /*initBonus bool function call

    if (initBonus(score)) { /*if bool initBonus returns true
        cout<<"*****"<<endl;
        cout<<"\t BONUS ROUND INITIALIZED:"<<endl;
        bonusQ1(quest, questB, score, correct, incorrect, name); /*bonus question 1 function call
    } else { /*if bool initBonus returns false
        gameSolution(quest, questB, score, correct, incorrect, name);
        /*if bonus round is not initialized, immediately display game solution
    }
}

void bonusQ1(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) {
/*bonus 1 definition
/*only initialized if the initBonus function returns true
    char userA; /*user answer
    char ans = 'c'; /*correct answer
    cout<<questB[0]<<endl; /*bonus question 1
    cout<<"a. 1 \t b. 10 \t c. 181 \t d. 300"<<endl; /*bonus question 1 choices
    cin>>userA; /*take in user answer

```

```

    if(checkAns(userA,ans,score,correct,incorrect) == true) { /**if the user's answer is correct
        bonusQ2(quest, questB, score, correct, incorrect, name); /**bonus question 2 function call
    } else { /**if the user's answer is incorrect
        bonusQ2(quest, questB, score, correct, incorrect, name); /**bonus question function call
    }
}

void bonusQ2(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /**bonus 2
definition
    char userA; /**user's answer
    char ans = 'c'; /**correct answer
    cout<<"*****"<<endl;
    cout<<questB[1]<<endl; /**bonus question 2
    cout<<"a. Mercury \t b. Uranus \t c. Jupiter \t d. Venus"<<endl; /**bonus question 2 choices
    cin>>userA; /**take in user answer

    if(checkAns(userA,ans,score,correct,incorrect) == true) { /**if the user's answer is correct
        bonusQ3(quest, questB, score, correct, incorrect, name); /**bonus question 3 function call
    } else { /**if the user's answer is incorrect
        bonusQ3(quest, questB, score, correct, incorrect, name); /**bonus question 3 function call
    }
}

void bonusQ3(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /**bonus 3
definition
    char userA; /**user's answer
    char ans = 'c'; /**correct answer
    cout<<"*****"<<endl;
    cout<<questB[2]<<endl; /**bonus question 3
    cout<<"a. 2 \t b. 1 \t c. 12 \t d. 6"<<endl; /**bonus question 3 choices
    cin>>userA; /**take in user answer

    if(checkAns(userA,ans,score,correct,incorrect) == true) { /**if the user's answer is correct
        bonusQ4(quest, questB, score, correct, incorrect, name); /**bonus question 4 function call
    } else { /**if the user's answer is incorrect
        bonusQ4(quest, questB, score, correct, incorrect, name); /**bonus question 4 function call
    }
}

void bonusQ4(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /**bonus 4
definition
    char userA; /**user's answer
    char ans = 'c'; /**correct answer
    cout<<"*****"<<endl;
    cout<<questB[3]<<endl; /**bonus question 4
    cout<<"a. Spacelab \t b. NASA \t c. Skylab \t d. None of the above"<<endl; /**bonus question 4choices
    cin>>userA; /**take in user input

    if(checkAns(userA,ans,score,correct,incorrect) == true) { /**if the user's answer is correct
        bonusQ5(quest, questB, score, correct, incorrect, name); /**bonus question 5 function call
    } else { /**if the user's answers is in
        bonusQ5(quest, questB, score, correct, incorrect, name); /**bonus question 5 function call

```



```

    }
}

void bonusQ5(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) { /**bonus 5
definition
    char userA; /**user's answer
    char ans = 'c'; /**correct answer
    cout<<"*****"<<endl;
    cout<<questB[4]<<endl; /**bonus 5 question
    cout<<"a. 1 day \t b. 12 hours \t c. 60 minutes \t d. 5 hours"<<endl;/**bonus 5 question choices
    cin>>userA; /**take in user's choice

    checkAns(userA,ans,score,correct,incorrect);

    if (initBonus(score)) { /**if the initBonus function returns true
        bonusgameSolution(quest, questB, score, correct, incorrect, name);
        /**call the function that shows both regular and
        /**bonus answers 1-10
    } else { /**if the initBonus function returns false
        gameSolution(quest, questB, score, correct, incorrect, name);
        /**call the function that shows the regular trivia
        /**game answers 1-5
    }
}

bool initBonus(int score) { /**initBonus function definition
    bool initBonus; /**initialize variable to hold boolean value
    if (score >= 400) { /**if score is >= 400 i.e., 4 questions are answered correctly
        initBonus = true; /**initBonus returns true and bonus round is initialized
    } else {
        initBonus = false; /**otherwise initBonus returns false
        /**and bonus round is not initialized
    }
    return initBonus; /**returns the value calculated
}

void gameSolution(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) {
/**gameSolution function definition
/**outputs the solution to the regular questions
    cout<<"*****"<<endl;
        cout<<"\t GAME SOLUTION"<<endl;
        ifstream file; /**Reading from file
        file.open("answers.txt"); /**open the answers.txt file
        char sol; /**initialize variable to hold data in answers.txt file
        file >> sol; /**read answer to question 1
        cout<<sol<<endl; /**output
        file >> sol; /**read answer to question 2
        cout<<sol<<endl; /**output
        file >> sol; /**answer to question 3
        cout<<sol<<endl; /**output
        file >> sol; /**answer to question 4
        cout<<sol<<endl; /**output
        file >> sol; /**answer to question 5
        cout<<sol<<endl; /**output

```

```

        file.close(); /*close answers.txt
    gameOver(quest, questB, score, correct, incorrect, name); /*gameOver function call
}

void bonusgameSolution(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) {
/*bonusgameSolution function definition
/*outputs the solution to the regular questions and bonus questions
cout<<"*****"<<endl;
    cout<<"\t GAME SOLUTION"<<endl;
    ifstream file; /*Reading from file
    file.open("answersbonus.txt"); /*open answersbonus.txt file
    char sol; /*initialize character to hold data in answersbonus.txt file
    file >> sol; /*answer to question 1
        cout<<sol<<endl; /*output
    file >> sol; /*answer to question 2
        cout<<sol<<endl; /*output
    file >> sol; /*answer to question 3
        cout<<sol<<endl; /*output
    file >> sol; /*answer to question 4
        cout<<sol<<endl; /*output
    file >> sol; /*answer to question 5
        cout<<sol<<endl; /*output
    cout<<"-----BONUS-----"<<endl; /*bonus solution
    file >> sol; /*answer to bonus question 1
        cout<<sol<<endl; /*output
    file >> sol; /*answer to bonus question 2
        cout<<sol<<endl; /*output
    file >> sol; /*answer to bonus question 3
        cout<<sol<<endl; /*output
    file >> sol; /*answer to bonus question 4
        cout<<sol<<endl; /*output
    file >> sol; /*answer to bonus question 5
        cout<<sol<<endl; /*output
    file.close(); /*close answersbonus.txt
    gameOver(quest, questB, score, correct, incorrect, name); /*gameOver function call
}

```

```

void gameOver(string quest[], string questB[], int &score, int &correct, int &incorrect, string name) {
/*gameOver function definition
cout<<"-----CONGRATULATIONS-----"<<endl;
for(int i = 0; i < 2; i++) { /*for loops for cat output bc why not!
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
    cout<<" ";<<endl;
}

```

```

cout<<" —————"<<endl;
cout<<" —————"<<endl;
cout<<" —————"<<endl;
cout<<" —————"<<endl;
/*very important cat, if you delete the game will break!!!
}
cout<<"Woo! Pusheen the Cat is happy that you have completed the game, " <<name<<"!"<<endl;

if (initBonus(score)) { /*includes scores and questions from the bonus round
    /*if applicable
    cout<<"Your final score: "<<score<<endl; /*display user's final score
    cout<<"You answered "<<correct<<" questions out of 10!"<<endl;
    /*display total increment of correctly answered questions
    int total; /*total questions
    float perc; /*percentage of correct questions
    total = correct + incorrect; /*total calculation
    perc = (correct/static_cast<float>(total)) * 100; /*percentage calculation
    cout<<"Or " << perc << "% of the questions."<<endl; /*display percentage
} else { /*if bonus round was not initiated
    cout<<"Your final score: "<<score<<endl; /*display user's final score
    cout<<"You answered "<<correct<<" questions out of 5!"<<endl;
    /*display total increment of correctly answered questions
    int total; /*total questions
    float perc; /*percentage of correct questions
    total = correct + incorrect; /*total calculation
    perc = (correct/static_cast<float>(total)) * 100; /*percentage calculation
    cout<<"Or " << perc << "% of the questions."<<endl; /*display percentage
}
ofstream fileout; /*fileout initialized of type ofstream
fileout.open("scores.txt"); /*output to scores.txt
fileout <<name<<":"<< score<<endl; /*output score of the user
fileout<<"*****"<<endl;
fileout<<"Your reward: A fun trick!"<<endl;
fileout<<"Here is an array of numbers."<<endl;
int array[5] = {5, 4, 3, 2, 1};
for (int i = 0; i < 5; i++) {
    fileout<<array[i];
}
int swap;
for(int i = 0; i < 5; i++) { //first integer
    for(int j = i + 1; j < 5; j++) { //comparing integer (after)
        if(array[i] > array[j]) {
            swap = array[i];
            array[i] = array[j];
            array[j] = swap;
        }
    }
}
fileout<<endl;
fileout<<"Here is that same array reversed!"<<endl;
for(int i = 0; i < 5; i++) {
    fileout<<array[i];
}

```

}