

PROGRAM 3

CSC 1300 / SPRING 2025



(MIXTURE BETWEEN CANDYLAND AND LIFE)



ASSIGNMENT & DUE DATES

Assignment Date: Wednesday, March 5, 2025

Due Date: Friday, April 4, 2025

This assignment can be submitted up to 2 days late at 10 points off per day late.

DESCRIPTION

- You are programming a game in C++ where your players navigate through an imaginary world (board) using imaginary dice.
- Your imaginary world has good things and bad things in it.
- Each player begins the game with zero money in their account and on board space zero.
- Each player has a turn where all they do is roll a dice.
- When a player lands on a space, either good or bad is selected randomly. If good, then something good happens to the player, a smiley face is printed, and money is added to their account. If bad, then something bad happens to the player, a frown face is printed, and money is subtracted from their account.
- The game ends when a player lands on or goes past the ending space on the board.

FILES

You will implement this program in three files: one header file, and two source files.

- **prog3.h** – should contain your include guards (or #pragma once), all the #include files necessary to run your program, using namespace std, global constant variables, and all function prototypes
- **prog3_driver.cpp** – should only contain the main function definition.
- **prog3_functions.cpp** – should contain the function definitions of all functions other than the main function.

IMPORTANT RULES TO REMEMBER

- **Do NOT use ChatGPT, VSCode GitHub Copilot, or any other generative AI** to produce code for this program. This is considered cheating, and you will be charged with academic misconduct and earn a ZERO for this programming assignment.
- **Do NOT work with a partner, friend, parent, or classmate on this program!!** This will be considered cheating, and you will be charged with academic misconduct and earn a ZERO for this programming assignment. Get help from the Teaching Assistants/Mrs. Crockett/Mr. Vandergriff/Ms. Aryal when you get stuck!!
- Include comments throughout your code and a comment block at the top of your source file containing the filename, author, title, and date
- Make your output neat, easy to read, and make sure everything is spelled correctly and uses proper grammar.
- Each programming statement should be on its own line, and you should use consistent indentions.
- **Do NOT use programming constructs not yet taught in the class.** This means you **can't use the following in your program:**
 - Vectors
 - Pointers
 - Structs
 - Objects/classes
 - Libraries not covered in class (can't use algorithm, map, etc.)
 - Range-based for loops
 - Ternary operators
 - Try/Catch

CONSTANT VARIABLES

- Maximum Number of Players possible: 20
- Number of Spaces on Board: 25

These variables should be created in your header file (.h) as global constants.

OVERALL PROGRAM

- You will have three arrays defined in your main function:
 - **names** – will hold the names of players playing the game. Example: names[0] could hold April Crockett and names[1] could hold Jason Crockett if April & Jason are currently playing the game.
 - **boardSpace** – will hold the current location (space) of players playing the game. Example: boardSpace[0] could hold 15 and boardSpace[2] could hold 6 if April was currently at space 15 on the board and Jason was currently at space 6 on the board.
 - **money** –will hold how much money each player has playing the game. Example: money[0] could hold 50000 and money[1] could hold -4000 if April currently had \$50,000 and Jason had -\$4,000. (yes – people can have a negative balance in the game!)
- You will allow your players to play the game as many times as they want
- I named my imaginary land **Crockettland**, but you should name your imaginary land whatever you want.
- You will create two text files – **bad.txt** and **good.txt**. There are more details on this later in this document.

PROGRAM SPECIFICATIONS / FLOW

MAIN FUNCTION (IN PROG3_DRIVER.CPP)

- Print out the name of your imaginary land/game.
- Ask user how many players are playing and validate that they didn't enter more than the maximum number of players – and that it is more than zero.
- Set up your arrays for the start of the game! Set each element of `names` array to an empty string, each element of `boardSpace` array to zero, and each element of `money` array to 0.0.
- Call the `getPlayersNames()` function
- Create a loop that will iterate until one of the players has reached the last space on the board.
- Create another loop to iterate through each of the players for each turn. For each player's turn, you will:
 - Call the `RollDice()` function
 - Add the dice number to the position in the `boardSpace` array that corresponds to the current player.
 - If they have reached the end of the board, then call the `PlayerFinishedBoard()` function.
 - If they have not reached the board, then call the `ActivateActionOnSpace()` function.
- After a player reached the ending space on the board and the results have all been printed, then ask the user if they want to play again.

ALL OTHER FUNCTIONS (IN PROG3_FUNCTIONS.CPP)

GETPLAYERNAMES FUNCTION

Parameters: string array (containing player's names), and an integer holding the number of players that want to play

Return data: none

- Get each player's name and place their name in each element of the `names` array.
- Notice when the player's names are printed out in the sample output. Your program should print out the player's names in the same way.

ROLLDICE() FUNCTION

Parameters: a string, holding the current player's name

Return data: integer, with the dice number rolled

- Print out the player's name and tell them to press enter to roll die.
- Randomly generate a number between 1 & 6 (for the dice roll)
- Print a cool picture of the dice that was rolled (code given to you in `dice.cpp`)

PLAYERFINISHEDBOARD FUNCTION

Parameters: all the arrays, the number of players

Return data: none

This code should execute when one of the players reached the last space on the board. It will display the results of the game – who reached the end of the board and also who ended up with the most money.

- Use a for loop to iterate through the `boardSpace` array and find the player who reached the highest boardSpace. Capture this player's name.
- Print out the player who had the highest board space.
- Use a for loop to iterate through the `money` array and find the player who had the most money at the end of the game. Capture this player's name.
- Print out the player who had the most money.

ACTIVATEACTIONONSPACE FUNCTION

Parameters: all the arrays, the number of players, the integer index of the current player

Return data: none

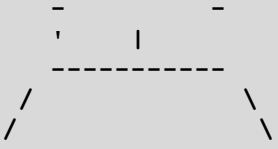
Print out their current board space and then display what happens on the space – good or bad.

There are two text files containing the text of what happens. You will have to create each text file by opening notepad or another editor and manually typing them. The `good.txt` text file should contain 20 good things that can happen to the player. The `bad.txt` text file should contain 20 bad things that can happen to the player.

- First, randomly generate either a 1 or 2. 1 will represent something good happening and 2 will represent something bad happening.
- If good, then...
 - Open the `good.txt` file
 - Print out a big smiley face (doesn't have to look exactly like mine but it has to be happy)
 - Print the word "GREAT! " (or something similar)

```
      *      *
      |
     \      /
      \    /
       ---
GREAT!  [TEXT FROM good.txt HERE...READ BELOW]
```

- If bad, then...
 - Open the bad.txt file
 - Print out a big frowny face (doesn't have to look exactly like mine but it has to be sad)
 - Print the word "OH NO! " (or something similar)



OH NO! [TEXT FROM bad.txt HERE...READ BELOW]

- Then randomly generate a number between 1 & 20.
- Use a for loop that iterates the number of times that was randomly generated in the step above.
 - In the for loop, read in a line from the file using getline.
- After the for loop, print out the line from the file (this will replace the red text in the examples above).
- Then, randomly generate a number between 1 & 100,000.
 - If good, then add this randomly generated amount to this player's money (in the money array).
 - If bad, then subtract this randomly generated amount to this player's money (in the money array).
- Print out to the screen how much money this player has now in their account.

HOW TO SUBMIT

Upload a zip file named **Program3.zip** containing your submission files, which should include **prog3.h**, **prog3_driver.cpp**, and **prog3_functions.cpp** to the iLearn Assignment named **Program 3**.

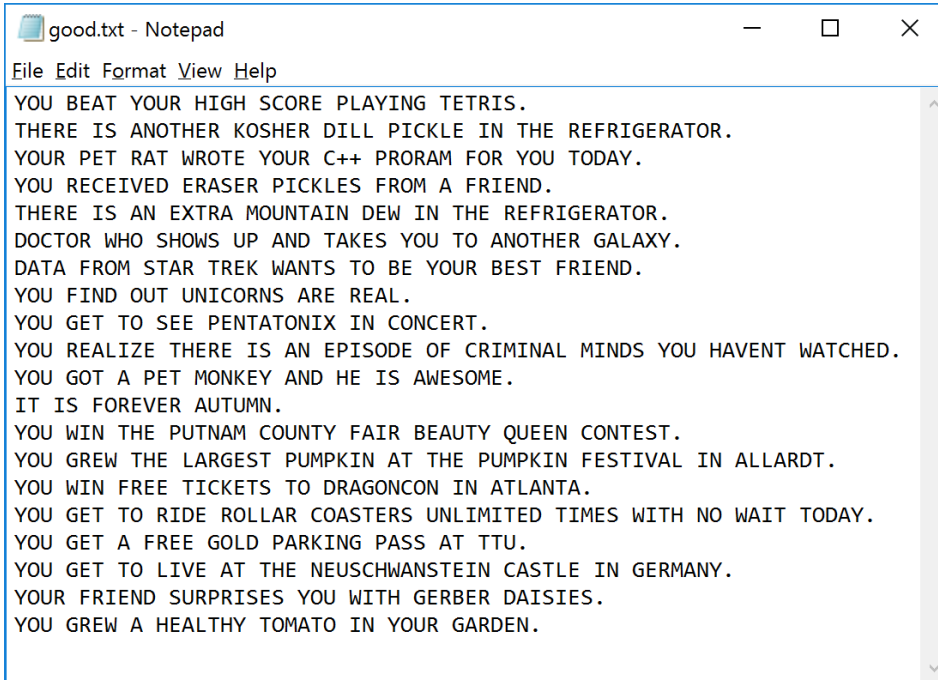
GRADING EXPECTATIONS

- A grade rubric is provided in the assignment so you can see how you will be graded.
- Grading will be completed within 2 weeks of the due date.
- Programs you submit must work on the instructor's machine or the grader's machine to receive full credit. I know this is not awesome but there is not enough time or resources to test your program in a variety of computers/compilers when grading.
- If you are worried that you may experience problems, you are welcome to direct message the TAs or your instructor **BEFORE** the day the program is due to have us test your code. We may or may not check email/Teams on Saturday/Sunday. We will test your code one time to make sure it works and return the results to you.
- **Be aware that MACs are more forgiving than PCs** – they will initialize your variables to zero for you and sometimes include C++ header files for you. The instructor's computer is a PC and will not do this for you, which will produce different results.

OUTPUT – YOUR OUTPUT SHOULD LOOK VERY SIMILAR TO MINE!!

SAMPLE TEXT FILE – GOOD.TXT

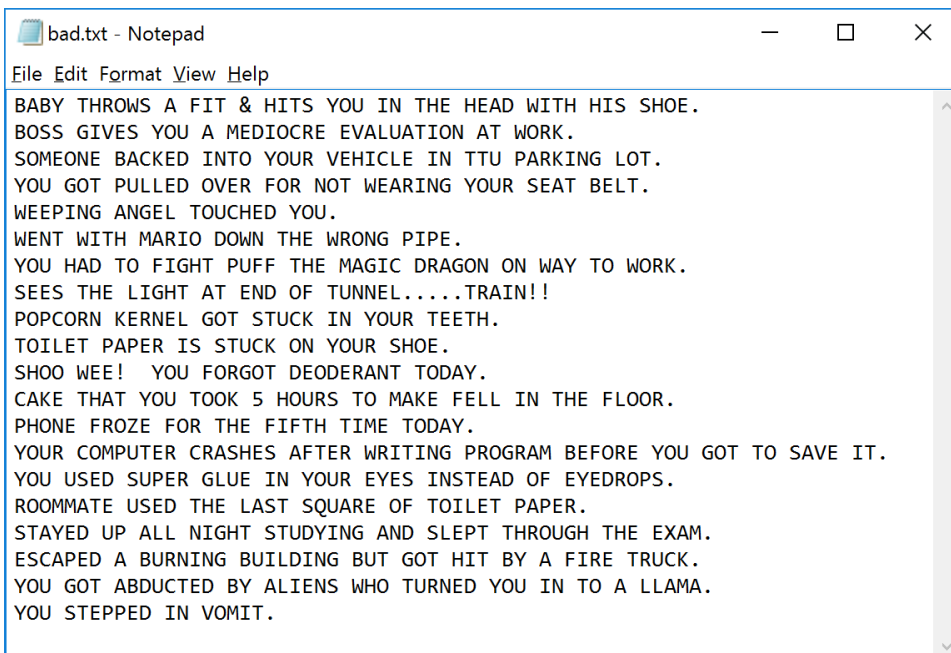
I have provided a sample good.txt file so you can see what it looks like but **you must write your own 20 “good” sentences** of things that could happen in your game that would be considered good fortune for your player.



```
good.txt - Notepad
File Edit Format View Help
YOU BEAT YOUR HIGH SCORE PLAYING TETRIS.
THERE IS ANOTHER KOSHER DILL PICKLE IN THE REFRIGERATOR.
YOUR PET RAT WROTE YOUR C++ PRORAM FOR YOU TODAY.
YOU RECEIVED ERASER PICKLES FROM A FRIEND.
THERE IS AN EXTRA MOUNTAIN DEW IN THE REFRIGERATOR.
DOCTOR WHO SHOWS UP AND TAKES YOU TO ANOTHER GALAXY.
DATA FROM STAR TREK WANTS TO BE YOUR BEST FRIEND.
YOU FIND OUT UNICORNS ARE REAL.
YOU GET TO SEE PENTATONIX IN CONCERT.
YOU REALIZE THERE IS AN EPISODE OF CRIMINAL MINDS YOU HAVENT WATCHED.
YOU GOT A PET MONKEY AND HE IS AWESOME.
IT IS FOREVER AUTUMN.
YOU WIN THE PUTNAM COUNTY FAIR BEAUTY QUEEN CONTEST.
YOU GREW THE LARGEST PUMPKIN AT THE PUMPKIN FESTIVAL IN ALLARDT.
YOU WIN FREE TICKETS TO DRAGONCON IN ATLANTA.
YOU GET TO RIDE ROLLAR COASTERS UNLIMITED TIMES WITH NO WAIT TODAY.
YOU GET A FREE GOLD PARKING PASS AT TTU.
YOU GET TO LIVE AT THE NEUSCHWANSTEIN CASTLE IN GERMANY.
YOUR FRIEND SURPRISES YOU WITH GERBER DAISIES.
YOU GREW A HEALTHY TOMATO IN YOUR GARDEN.
```

SAMPLE TEXT FILE – BAD.TXT

I have provided a sample bad.txt file so you can see what it looks like but **you must write your own 20 “bad” sentences** of things that could happen in your game that would be considered good fortune for your player.



```
bad.txt - Notepad
File Edit Format View Help
BABY THROWS A FIT & HITS YOU IN THE HEAD WITH HIS SHOE.
BOSS GIVES YOU A MEDIOCRE EVALUATION AT WORK.
SOMEONE BACKED INTO YOUR VEHICLE IN TTU PARKING LOT.
YOU GOT PULLED OVER FOR NOT WEARING YOUR SEAT BELT.
WEeping ANGEL TOUCHED YOU.
WENT WITH MARIO DOWN THE WRONG PIPE.
YOU HAD TO FIGHT PUFF THE MAGIC DRAGON ON WAY TO WORK.
SEES THE LIGHT AT END OF TUNNEL.....TRAIN!!
POPCORN KERNEL GOT STUCK IN YOUR TEETH.
TOILET PAPER IS STUCK ON YOUR SHOE.
SHOO WEE! YOU FORGOT DEODERANT TODAY.
CAKE THAT YOU TOOK 5 HOURS TO MAKE FELL IN THE FLOOR.
PHONE FROZE FOR THE FIFTH TIME TODAY.
YOUR COMPUTER CRASHES AFTER WRITING PROGRAM BEFORE YOU GOT TO SAVE IT.
YOU USED SUPER GLUE IN YOUR EYES INSTEAD OF EYEDROPS.
ROOMMATE USED THE LAST SQUARE OF TOILET PAPER.
STAYED UP ALL NIGHT STUDYING AND SLEPT THROUGH THE EXAM.
ESCAPED A BURNING BUILDING BUT GOT HIT BY A FIRE TRUCK.
YOU GOT ABDUCTED BY ALIENS WHO TURNED YOU IN TO A LLAMA.
YOU STEPPED IN VOMIT.
```

SAMPLE OUTPUT OF PROGRAM RUNNING

User input is highlighted in yellow.

YOU ARE PLAYING CROCKETTLAND!

How many players? 2

PLAYER 1, WHAT IS YOUR NAME?

NAME: BammaLammaJam Jam

PLAYER 2, WHAT IS YOUR NAME?

NAME: Grape Ape

BammaLammaJam Jam, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 5.

Only after user presses the Enter key
does the "YOU ROLLED A 5." appear.

```
| o   o |
|  o   |
| o   o |
|_____|
```

BammaLammaJam Jam IS NOW ON SPACE 5

```
      *      *
      |
  \      /
  \      /
  -----
```

GREAT! YOU GREW THE LARGEST PUMPKIN AT THE PUMPKIN FESTIVAL IN ALLARDT.
ADDED \$6745.00 TO YOUR ACCOUNT.
YOU NOW HAVE \$6745.00 IN YOUR ACCOUNT.

Grape Ape, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 1.

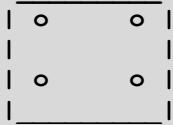
```
|_____|
|  o  |
|_____|
```

Grape Ape IS NOW ON SPACE 1

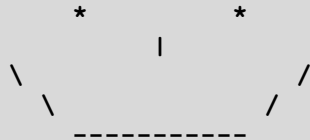
```
      -      -
      |
  /      \
  /      \
```

OH NO! TOILET PAPER IS STUCK ON YOUR SHOE.
SUBTRACTED \$653.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-653.00 IN YOUR ACCOUNT.

BammaLammaJam Jam, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 4.

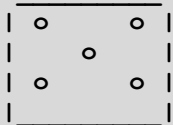


BammaLammaJam Jam IS NOW ON SPACE 9

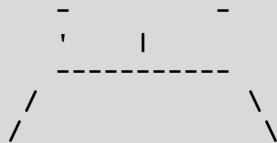


GREAT! YOU BEAT YOUR HIGH SCORE PLAYING TETRIS.
ADDED \$3895.00 TO YOUR ACCOUNT.
YOU NOW HAVE \$10640.00 IN YOUR ACCOUNT.

Grape Ape, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 5.

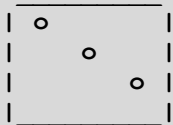


Grape Ape IS NOW ON SPACE 6

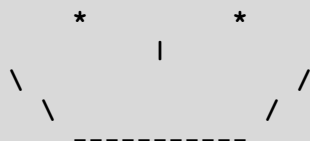


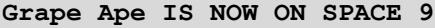
OH NO! SOMEONE BACKED INTO YOUR VEHICLE IN TTU PARKING LOT.
SUBTRACTED \$15964.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-16617.00 IN YOUR ACCOUNT.

BammaLammaJam Jam, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 3.



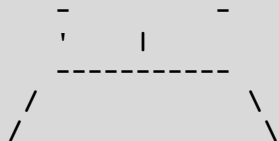
BammaLammaJam Jam IS NOW ON SPACE 12





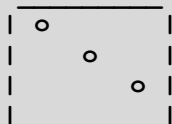




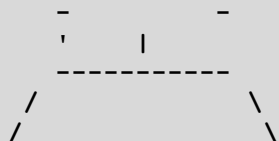


OH NO! PHONE FROZE FOR THE FIFTH TIME TODAY.
SUBTRACTED \$2219.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$8737.00 IN YOUR ACCOUNT.

BammaLammaJam Jam, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 3.

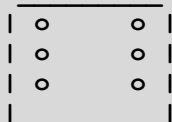


BammaLammaJam Jam IS NOW ON SPACE 20

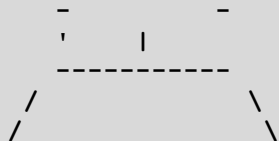


OH NO! ESCAPED A BURNING BUILDING BUT GOT HIT BY A FIRE TRUCK.
SUBTRACTED \$19849.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-9232.00 IN YOUR ACCOUNT.

Grape Ape, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 6.



Grape Ape IS NOW ON SPACE 19



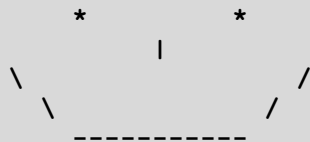
OH NO! BABY THROWS A FIT & HITS YOU IN THE HEAD WITH HIS SHOE.
SUBTRACTED \$12646.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-3909.00 IN YOUR ACCOUNT.

BammaLammaJam Jam, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 3.



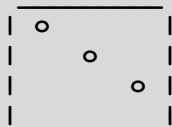


BammaLammaJam Jam IS NOW ON SPACE 23

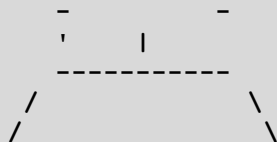


GREAT! YOU REALIZE THERE IS AN EPISODE OF CRIMINAL MINDS YOU HAVENT WATCHED.
ADDED \$27022.00 TO YOUR ACCOUNT.
YOU NOW HAVE \$17790.00 IN YOUR ACCOUNT.

Grape Ape, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 3.

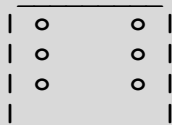


Grape Ape IS NOW ON SPACE 22



OH NO! SEES THE LIGHT AT END OF TUNNEL.....TRAIN!!
SUBTRACTED \$24735.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-28644.00 IN YOUR ACCOUNT.

BammaLammaJam Jam, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 6.



YOU FINISHED THE CROCKETTLAND BOARD!!

PLAYER WHO SURVIVED ENTIRE CROCKETTLAND BOARD: BammaLammaJam Jam
PLAYER WHO HAS THE MOST CROCKETTLAND MONEY BammaLammaJam Jam has \$17790.00

DO YOU WANT TO PLAY AGAIN?
Y or N: **y**

YOU ARE PLAYING CROCKETTLAND!
How many players? **2**

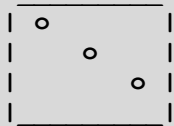
PLAYER 1, WHAT IS YOUR NAME?

NAME: Jack Crockett

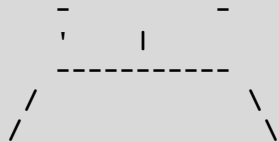
PLAYER 2, WHAT IS YOUR NAME?

NAME: AtTiCuS

Jack Crockett, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 3.

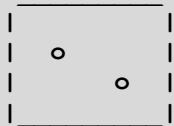


Jack Crockett IS NOW ON SPACE 3

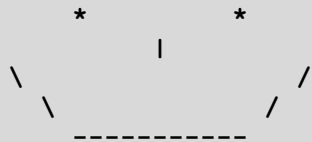


OH NO! YOU HAD TO FIGHT PUFF THE MAGIC DRAGON ON WAY TO WORK.
SUBTRACTED \$2552.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-2552.00 IN YOUR ACCOUNT.

AtTiCuS, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 2.

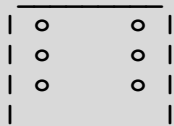


AtTiCuS IS NOW ON SPACE 2

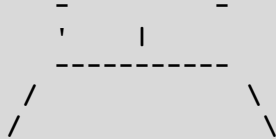


GREAT! YOU GREW A HEALTHY TOMATO IN YOUR GARDEN.
ADDED \$26953.00 TO YOUR ACCOUNT.
YOU NOW HAVE \$26953.00 IN YOUR ACCOUNT.

Jack Crockett, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 6.

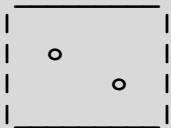


Jack Crockett IS NOW ON SPACE 9

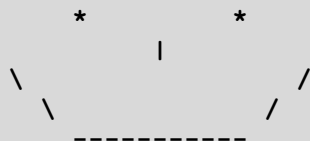


OH NO! STAYED UP ALL NIGHT STUDYING AND SLEPT THROUGH THE EXAM.
SUBTRACTED \$17931.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-20483.00 IN YOUR ACCOUNT.

AtTiCuS, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 2.

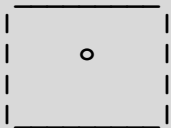


AtTiCuS IS NOW ON SPACE 4

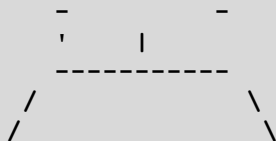


GREAT! DOCTOR WHO SHOWS UP AND TAKES YOU TO ANOTHER GALAXY.
ADDED \$21355.00 TO YOUR ACCOUNT.
YOU NOW HAVE \$48308.00 IN YOUR ACCOUNT.

Jack Crockett, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 1.

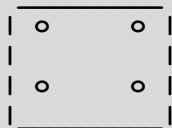


Jack Crockett IS NOW ON SPACE 10

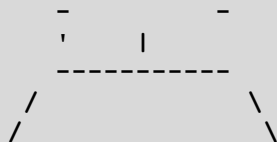


OH NO! TOILET PAPER IS STUCK ON YOUR SHOE.
SUBTRACTED \$32585.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-53068.00 IN YOUR ACCOUNT.

AtTiCuS, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 4.



AtTiCuS IS NOW ON SPACE 8



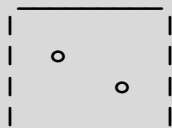
OH NO! SEES THE LIGHT AT END OF TUNNEL.....TRAIN!!

SUBTRACTED \$7495.00 FROM YOUR ACCOUNT.

YOU NOW HAVE \$40813.00 IN YOUR ACCOUNT.

Jack Crockett, PRESS ENTER TO ROLL DIE.

YOU ROLLED A 2.



Jack Crockett IS NOW ON SPACE 12



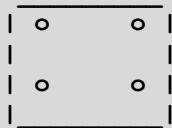
GREAT! YOUR FRIEND SURPRISES YOU WITH GERBER DAISIES.

ADDED \$18464.00 TO YOUR ACCOUNT.

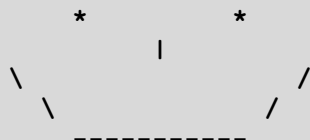
YOU NOW HAVE \$-34604.00 IN YOUR ACCOUNT.

AtTiCuS, PRESS ENTER TO ROLL DIE.

YOU ROLLED A 4.



AtTiCuS IS NOW ON SPACE 12



GREAT! YOUR FRIEND SURPRISES YOU WITH GERBER DAISIES.

ADDED \$27964.00 TO YOUR ACCOUNT.

YOU NOW HAVE \$68777.00 IN YOUR ACCOUNT.

Jack Crockett, PRESS ENTER TO ROLL DIE.

YOU ROLLED A 6.

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Jack Crockett IS NOW ON SPACE 18

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GREAT! YOU WIN THE PUTNAM COUNTY FAIR BEAUTY QUEEN CONTEST.

ADDED \$13953.00 TO YOUR ACCOUNT.

YOU NOW HAVE \$-20651.00 IN YOUR ACCOUNT.

AtTiCuS, PRESS ENTER TO ROLL DIE.

YOU ROLLED A 1.

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AtTiCuS IS NOW ON SPACE 13

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OH NO! PHONE FROZE FOR THE FIFTH TIME TODAY.

SUBTRACTED \$18027.00 FROM YOUR ACCOUNT.

YOU NOW HAVE \$50750.00 IN YOUR ACCOUNT.

Jack Crockett, PRESS ENTER TO ROLL DIE.

YOU ROLLED A 4.

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Jack Crockett IS NOW ON SPACE 22

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OH NO! PHONE FROZE FOR THE FIFTH TIME TODAY.
SUBTRACTED \$31327.00 FROM YOUR ACCOUNT.
YOU NOW HAVE \$-51978.00 IN YOUR ACCOUNT.

AtTiCuS, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 1.

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AtTiCuS IS NOW ON SPACE 14

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GREAT! YOU RECEIVED ERASER PICKLES FROM A FRIEND.
ADDED \$10044.00 TO YOUR ACCOUNT.
YOU NOW HAVE \$60794.00 IN YOUR ACCOUNT.

Jack Crockett, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 2.

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Jack Crockett IS NOW ON SPACE 24

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GREAT! YOU GREW A HEALTHY TOMATO IN YOUR GARDEN.
ADDED \$1076.00 TO YOUR ACCOUNT.
YOU NOW HAVE \$-50902.00 IN YOUR ACCOUNT.

AtTiCuS, PRESS ENTER TO ROLL DIE.
YOU ROLLED A 3.

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AtTiCuS IS NOW ON SPACE 17

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GREAT! YOU GET TO SEE PENTATONIX IN CONCERT.

ADDED \$14298.00 TO YOUR ACCOUNT.

YOU NOW HAVE \$75092.00 IN YOUR ACCOUNT.

Jack Crockett, PRESS ENTER TO ROLL DIE.

YOU ROLLED A 1.

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YOU FINISHED THE CROCKETTLAND BOARD!!

PLAYER WHO SURVIVED ENTIRE CROCKETTLAND BOARD: Jack Crockett

PLAYER WHO HAS THE MOST CROCKETTLAND MONEY AtTiCuS has \$75092.00

DO YOU WANT TO PLAY AGAIN?

Y or N: **n**