\*\* Program name: Pizza room search – Final Project!

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## **Program Design**

Create a class that contains:

- 1. The room
  - a. 6 rooms that are derived from room
  - b. 4 pointers to point to next room (up, down, left, right)
  - c. Challenge function
  - d. Health function
- 2. Gameplay
  - a. Keeps track of user position
  - b. Items (pizza ingredients)
  - c. User (player) health
  - d. Map of house
  - e. Next movements
- 1. The room class (and derived classes)
  - a. Gets name of room in the form of a string
    - i. "Kitchen", "Bedroom", etc
  - b. Challenge function
    - i. Each room has a unique challenge
    - ii. If challenge is successful, then it returns a value
    - iii. This value is used to store a number in the vector of items
    - iv. If challenge fails, then returns a null and the user has to try again
    - v. Also, if the challenge fails, then the user loses health points (hunger points)
  - c. Health depletion function
    - i. Returns an integer that is used to subtract from the players health
    - ii. Each room has a different value for failure
    - iii. If health gets to 0 or below then user loses game
  - d. SetUp, down, left, right functions
    - i. For each room it sets the rooms up, down, left, or right
    - ii. (if the room exists) if not then set to null
  - e. GetUp, down, left, right functions
    - i. Returns values
- 2. Gameplay class
  - a. Has a room pointer called position
    - i. This keeps track of which room the user is in

- ii. Which also dictates if the user can move up, down, left, or right
- b. Has pointers for each room and sets them to each room
  - i. Each room then sets which room is up, right, down, or left
  - ii. Starting position is kitchen
- c. Has map function
  - i. Prints map and X marks the room the user is in for each movement
- d. Next move function
  - i. Asks user which way they want to move
  - ii. Validates input
  - iii. Moves if possible
  - iv. Otherwise asks for another move
- e. Main game play
  - i. Runs a while loop until user wins, loses, or quits
- f. Show items function
  - i. Prints each item in vector
  - ii. 1 = dough, 2 = sauce, etc
- g. Check health function
  - i. Checks if hunger health is 0 or below
  - ii. If so then game is terminated, and user loses game
  - iii. Otherwise allows user to continue playing

## **Test Table**

<b>Test Case</b>	Input Values	Function	Expected	Observed
			Outcomes	Outcomes
Check map and starting position	N/A	Gameplay while loop	Starting position is kitchen and X marks the spot	Starting position is kitchen and X marks the spot
Input next move from kitchen (up)	Input = 1	Gameplay while loop	X moves to garage and challenge for garage is initiated	X moves to garage and challenge for garage is initiated
Input next move from Garage (Down)	Input = 2	Gameplay while loop	X moves to kitchen and challenge for kitchen is initiated	X moves to kitchen and challenge for kitchen is initiated
Input for kitchen challenge question	Input = n	Gameplay while loop	Prints keep looking and asks for next move	Prints keep looking and asks for next move
Input next move from kitchen (left)	Input = 3	Gameplay while loop	X moves to backyard and challenge for backyard is initiated	X moves to backyard and challenge for backyard is initiated
Input next move from backyard (right)	Input = 4	Gameplay while loop	X moves to kitchen and challenge for kitchen is initiated	X moves to kitchen and challenge for kitchen is initiated
Input for kitchen challenge question	Input = y	Gameplay while loop	Prints you do not have all the ingredients and	Prints you do not have all the ingredients and

Input next move from kitchen (down)  Challenge in living room  Input = Y  Input next move from kitchen  Challenge in living room  Challenge in living room  Input = Y  Input next move from kitchen  Challenge in living room  Input = Y  Challenge in living room  Challenge in living room  Input = A  Challenge in living room  Input = A  Challenge in living room  (right)  Challenge in liput = A  Cameplay while loop  Challenge in loop  Cheese is stored in loop  Cheese is store	ing enge is item tor – ese te – d in
Input next move from kitchen (down)	ing enge n is  item tor –  ese te – d in
Input next move from kitchen (down)	ing enge is item tor – ese te – d in
From kitchen (down)   Composition   Challenge in living room   Challenge in loop   Ch	item tor – ese te – d in
Challenge in living room   Challenge in liput = A   Challenge in loop	item tor – ese te – d in
Challenge in living room  Challenge in living room  Input = N  Gameplay while loop  Gameplay while loop  Challenge in living room  Input = Y  Gameplay while loop  Gameplay while loop  Challenge in living room  Input = Y  Gameplay while loop  Input = A  Gameplay while loop  Challenge in living room  (right)  Challenge in liput = A  Gameplay while loop  Challenge in liput = B  Gameplay while loop  Input = A  Gameplay while loop  Input = B  Gameplay while loop  Input = A  Gameplay while loop  Input = A  Gameplay while loop  Input = B  Gameplay while loop  Input = A  Gameplay while loop  Input = B  Gameplay while loop  Input = A  Gameplay while loop  Input = A  Gameplay while loop  Input = B  Gameplay while loop  Input = A  Gameplay while loop  Input = B  Gameplay while loop  Input = A  Gameplay while loop  Input = B  Gameplay while loop  Input = B  Gameplay while loop  Input = A  Gameplay while loop  Input = B  Gameplay while loop  Input = A  Gameplay while loop  Input = B  I	item tor – ese te – d in
Challenge in living room  Input = N  Gameplay while loop  Gameplay while loop  Input = Y  Gameplay while loop  Gameplay while loop  Input = Y  Gameplay while loop  Input = Y  Gameplay while loop  Input = Y  Gameplay while loop  Input = A  Gameplay while loop  Gameplay while loop  Input = A  Gameplay while loop  Challenge in bedroom  Input = A  Gameplay while loop  Input = A  Gameplay while loop  Challenge in bedroom  Input = B  Gameplay while loop  Input = B  Input = B	ese te — d in
Input   Property   Input   Input   Property   Input   I	ese te — d in
Challenge in living room   Input = Y   Gameplay while loop   User finds cheese under roommate – cheese is stored in the vector   User finds cheese under roommate – cheese is stored in the vector   User finds cheese under roommate – cheese is stored in the vector   User finds cheese under roommate – cheese is stored in the vector   User finds cheese under roommate – cheese is stored in the vector   User finds cheese under roommate – cheese is stored in the vector   User finds cheese under roommate – cheese is stored in the vector   User finds cheese under roommate – cheese is stored in the vector   User finds cheese under roommate – cheese is stored in the vector   User finds cheese   User finds cheese is stored in the vector   User finds cheese   Use	ese te — d in
Challenge in living room	ese te – d in iated – no
Challenge in living room	ese te – d in
Ioop	te – d in
Cheese is stored in the vector   Cheese is stored in the vector	iated no
Input next move from living room (right)  Challenge in bedroom  Challenge in bedroom  Input = B  Gameplay while loop  Input = A  Gameplay while loop  Gameplay while loop  Gameplay while loop  Input = A  Gameplay while loop  Gameplay while loop  Gameplay while loop  Input = B  Gameplay while loop  Gameplay while loop  Input = B  Gameplay while loop  Gameplay while loop  Input = B  Gameplay while loop  Gameplay while loop  Input next move from bedroom (left)  Input = 3  Gameplay while loop  Input = 3  Input = 3  Gameplay while loop  Input = 3  Input = 4  Inpu	iated – no n
Input next move from living room (right)	– no n
from living room (right)    loop	– no n
Challenge in bedroom   Input = A   Gameplay while bedroom   Input = A   Gameplay while bedroom   Input = B   Gameplay while   Right choice - basil item is stored in vector   Input next move from bedroom (left)   Input = 3   Gameplay while bedroom   Input = 3   Gameplay while for living is skipped be user already collected cheese   Input = A   Gameplay while bedroom   Input = B   I	– no n
Challenge in bedroom   Input = A   Gameplay while bedroom   Input = A   Gameplay while bedroom   Input = B   Gameplay while   Right choice - basil item is stored in vector   Input next move from bedroom (left)   Input = 3   Gameplay while bedroom   Input = 3   Gameplay while for living is skipped be user already collected cheese   Input = A   Gameplay while bedroom   Input = B   I	– no n
Challenge in bedroom       Input = A       Gameplay while loop       Wrong choice – no item is stored in vector – health depletes       Wrong choice – no item is stored in vector – health depletes         Challenge in bedroom       Input = B       Gameplay while loop       Right choice – basil item is stored in vector       Right choice – basil item is stored in vector         Input next move from bedroom (left)       Input = 3       Gameplay while loop       X moves to living room and challenge for living is skipped bc user already collected cheese       X moves to living room and challenge collected cheese	– no n
bedroom    loop   item is stored in vector - health depletes   vector - health depletes	n
bedroom    loop   item is stored in vector - health depletes   vector - health depletes	n
Challenge in bedroom  Input = B  Gameplay while loop  Input = S  Gameplay while loop  Input next move from bedroom (left)  Input = 3  Gameplay while loop  Gameplay while loop  Input = 3  Gameplay while loop  Gameplay while loop  Toom and challenge room and challenge for living is skipped bc user already collected cheese  Challenge in depletes  Right choice – basil item is stored in vector  X moves to living room and challenge for living is skipped bc user already collected cheese	
Challenge in bedroom       Input = B       Gameplay while loop       Right choice – basil item is stored in vector       Right choice – basil item is stored in vector         Input next move from bedroom (left)       Input = 3       Gameplay while loop       X moves to living room and challenge for living is skipped bc user already collected cheese       X moves to living room and challenge for living is skipped bc user already collected cheese	
bedroom loop item is stored in vector vector  Input next move from bedroom (left) Input = 3 Gameplay while loop Toom and challenge for living is skipped bc user already collected cheese collected cheese item is stored vector  X moves to living room and challenge for living is skipped bc user already collected cheese	basil
Input next move from bedroom (left)  Input = 3  Gameplay while loop  Gameplay while room and challenge for living is skipped bc user already collected cheese  Vector  X moves to living room and challenge for living is skipped bc user already collected cheese	
Input next move from bedroom (left)  Input = 3  Gameplay while loop  X moves to living room and challenge for living is skipped bc user already collected cheese  X moves to living room and challenge for living is skipped bc user already collected cheese	
from bedroom (left)  loop  room and challenge for living is skipped bc user already collected cheese  room and challenge for living is sk bc user already collected cheese	ing
for living is skipped bc user already collected cheese collected cheese	
bc user already bc user already collected cheese collected chee	
collected cheese collected chee	
I Innut nevi move   I Innut = 7   I Gementer while   X moves to   X moves to	<u> </u>
(down) challenge for challenge for	
bathroom is bathroom is	
initiated initiated	
bathroom loop item is stored in item is stored	
vector – asks user to vector – asks u	
try again or quit-if try again or qu	
quit then user health quit then user	iealth
is depleted is depleted	
Challenge in Input = 3 Gameplay while right choice – item right choice –	
bathroom loop is stored in vector is stored in vec	
Input next move   Input = 1   Gameplay while   X moves to living   X moves to living	ıng
from bathroom (up)   loop   room and challenge   room and chal	
for living is skipped   for living is sk	enge
bc user already bc user already	enge ipped
collected cheese collected chee	enge
Input next move   Input = 1   Gameplay while   X moves to kitchen   X moves to ki	enge ipped
from living room loop and challenge for and challenge	enge ipped se chen
(up) kitchen is initiated kitchen is initiated	enge pped se chen
Challenge in Input = Y Gameplay while Check if all Check if all	enge pped se chen
kitchen loop ingredients are in ingredients are	enge ipped se chen for ated

			vector – if yes then user wins the game	vector – if yes then user wins the game
Quit	Input = 5	Gameplay while loop	Game ends	Game ends

## Reflection

When I first read the assignment requirements I panicked a bit because they were so general. We had free range to basically come up with any game we wanted to. This presented a challenge at first. It was hard for me to sit down and create a game from scratch and create functions from scratch. I was used to having a bit more structure and guidance, which makes starting a project easier.

But as a I got designing I loved having more free will to design my project how I wanted to. Less rules = less headache. I drew out my rooms with which item they would have and what kind of challenge they would each have. Once I got that going everything fell into place.

My main rule for myself for this final project was to keep it simple. I knew if the program got too complicated I would lose focus and end up stressing myself out. So, I hit the basic requirements and kept things manageable.

The hardest part for me was implementing all the pointers especially the up, down, left, or right pointers. I had a hard time visualizing how to set it up. I did some research and googling and realized it was simpler than I was imagining.

Even though the final project in theory is harder because we implemented all the things we learned over the term, I would agree with the professor the first project was still harder in terms of grasping the information and jumping in feet first to pointers and larger projects.

My programming skills have grown 100 percent from CS 161 until now and I feel like a programmer now! Great course. Great projects. I enjoyed writing every game and seeing the rewards on the screen.