Stage B : Design

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B1. Data structures

The file that holds reservation will be a sequential file, with all the sorted reservations saved. Each reservation will have five fields: customer name, reserved time, number of customers, table number and additional request.

Name	**Variable type**	**Sample data**	**justification**
CustomerName	String	HongJoon	Customer name is a string because name is made of letters
ReservedTime	Calendar	1352300886780	Reserved time is represented in milliseconds, Calendar data type has built in function that does conversion for us. Millisecond form will be changed into specific dates and times whenever user has to see this data.
numberOfCustomers	byte	8	Number of customers will be in integer form, and it won't require large variable size since it is not possible for groups of 100 people to reserve a restaurant.
TableNumber	Int[]	74, 75	Each tables is assigned with its ID number, and it has four seats on it. Variable type is in array because more than two tables may be assigned for group of customers who have more than 5 people.
request	String	I want to seat outdoor	Because request from customer is in sentence form, String variable is used.

An array of reservations at Restaurant class will read all the bookings for specific day and it will list on screen. When the user wants to get specific reservation for restaurant, program will search for names. When a name is found, program will allow user to edit or delete the booking when it is processed.

B2. Algorithms

Name	Search	
Description	Returns index of array that holds the requested String	
Preconditions	There is an array that holds data.	
Parameters	**Local Variable** **Name Type Vaulue**	**Return values**
String ss String[] array		Int

Code	`for int i=0, i<array.length`
	`  if ss = array[i]`
	`  return i`
	`  end if`
	`next i`
	`return -1`	

PostConditions	Index of an array will be found and will allow user to do operations with it, if nothing is found, -1 is returned	

Name	smartSearch	
Description	Returns multiple indexes of array that has part of the String. For example, “james” and “amy” will be found if user inputs “a”	
Preconditions	There is an array that holds data of String	
Parameters	**Local Variable** **Name Type Vaulue**	**Return values**
String ss String[] array Int arraySize	list int[] -1 numberFound int 0 disassemble char[] ‘’ reassembled String “”	Int[]

Code	`for int i=0, i<arraySize`
	`  disAssemble = staff[i] to array of characters`
	`  for k=0, k<staff[i].length`
	`  String assembled =""`
	`  for int j=k, j<staff[i].length`
	`  assembled+=disAssemble[j]`
	`  next j`
	`  if assembled startsWith ss`
	`  list[numberFound]=i`
	`  numberFound++`
	`  break`
	`  end if`
	`  next k`
	`next i`
	`return list;`	

PostConditions	Array of integers which indicate index of the array will be returned.	

Name	sort	
Description	Sorts array in ascending numerical order.	
Preconditions	Array that holds time values (in milliseconds), is out of order	
Parameters	**Local Variable** **Name Type Vaulue**	**Return values**
int[] time	Swap int 0	int[]

Code	`for k=0,k<length`
	`  for int i=0,i<length`
	`  if time[k]<time[i]`
	`  swap = time[k]`
	`  time[k] = time[i]`
	`  time[i] = swap`
	`  end if`
	`  next i`
	`next k`
	`return data`	

PostConditions	Array will be sorted in ascending order.	

Name	delete	
Description	Deletes an index from array, and decrease size of the array by 1	
Preconditions		
Parameters	**Local Variable** **Name Type Value**	**Return values**
int index Reservation[] original int arraySize	overwrited Reservation[] null	Reservation[]

Code	`for int i=0,i<index`
	`  overwrited[i] = original[i]`
	`next i`
	`for int j=index, j<arraySize-1`
	`  overwrited[j] = original[j+1]`
	`next j`
	`return staffOverwrite`	

PostConditions	Data in array at particular index will be deleted and size of the array will be decreased by 1.	

Name	allignToMiddle	
Description	Aligns String to the middle of given amount of spaces	
Preconditions		
Parameters	**Local Variable** **Name** **Type** **Value**	**Return values**
String message Int space	ss String “”	String

Code	`int blank=distance-a.length;`
	`if blank%2!=0`
	`  ss+=" "`
	`end if`
	`for int i=0,i<(blank/2)`
	`  ss+=" "`
	`next i`
	`ss+=` message
	`for int i=0;i<(blank/2)`
	`  ss+=" "`
	`next i`
	`return ss`	

PostConditions	Message is aligned at the center of given space.	

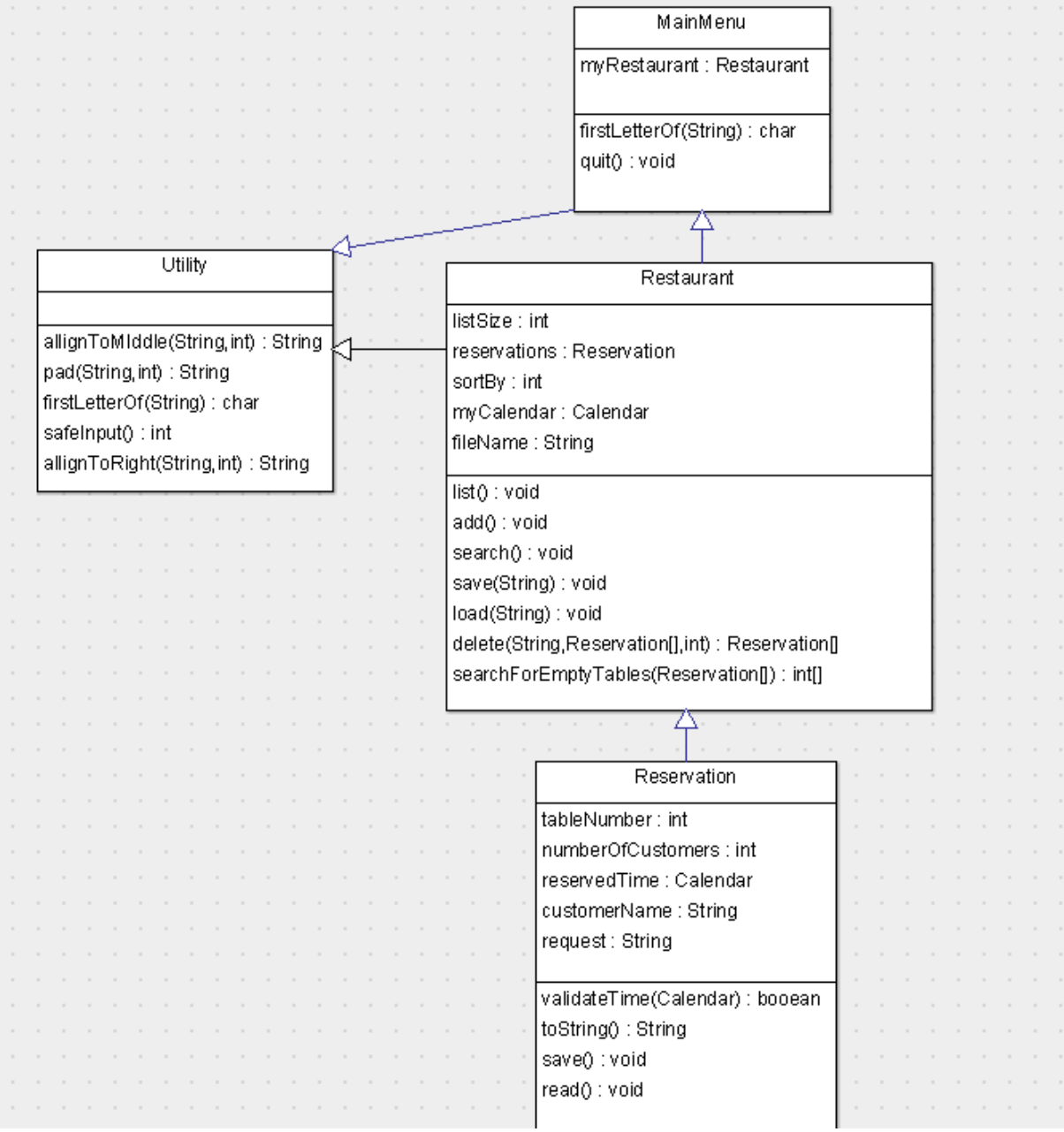
Name	pad	
Description	Allocates String and leaves space until the given points	
Preconditions		
Parameters	**Local Variable** **Name** **Type** **Value**	**Return values**
String message Int space	ss String “”	String

Code	`do`
	`  ss+=" ";`
	`while ss.length<space`
	`return ss`	

PostConditions		

B3. Modular organization

The program will have four classes, MainMenu, Restaurant, Utility and Reservation.



Class 1 :MainMenu

The MainMenu will be responsible for creating the restaurant class. It will also have to save the file, having an array to keep reservations saved. Main menu does not have any function except for quit().

Class 2 : Utility

This class is a collection of utility functions. Functions include aligning methods, input method that handles error and method that returns first character of the String. Class MainMenu and Resstaurant extends this class.

Class 3 : Restaurant

Restaurant class is collection class of reservations. This class is responsible for reading all reservations made and saved to the file.