Submission of Lab Exercise for Week 13

Data Storage Design

BITP 2223 Software Requirement and Design

Project Name: Study Bunny: Focus Timer

Group No: 19

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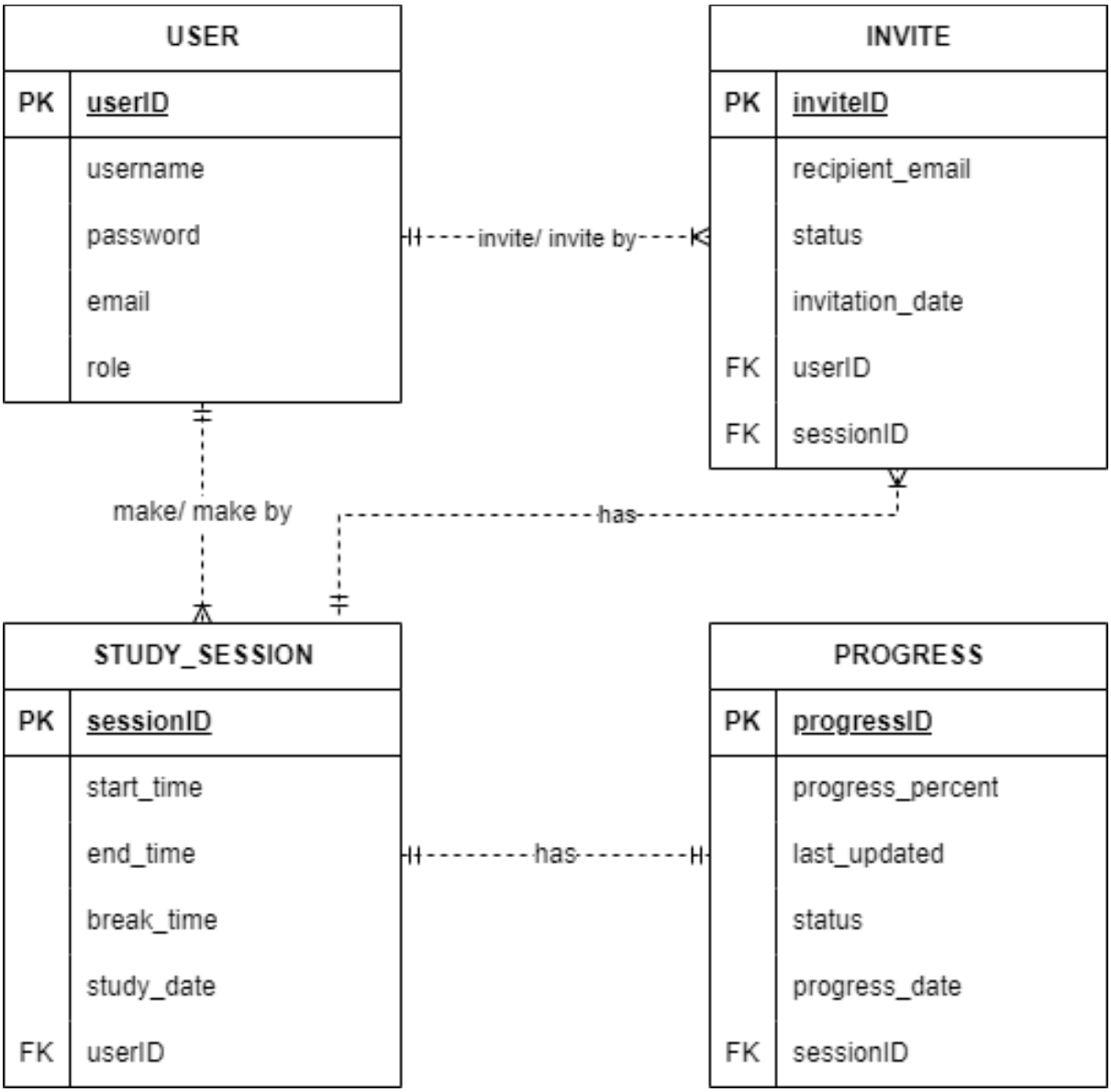
Data Model Design



The data model will be constructed using MySQL as the database management system. The specifications outlined in Tables 1, 2, and 3 will adhere to the size guidelines provided in the MySQL documentation.

Table 1: Data design for invite friend course

No	Field	Type	Size (byte)	Key
1.	inviteID	int	4	Primary
2.	recipient_email	Varchar	100	N/A
3.	status	Varchar	20	N/A
4.	invitation_date	date	3	N/A
5.	userID	int	4	Foreign key
6.	sessionID	int	4	Foreign key
Total Size			**135**	

Table 2: Data design for setup study session

No	Field	Type	Size (byte)	Key
1.	sessionID	int	4	Primary
2.	start_time	Varchar	100	N/A
3.	end_time	Varchar	20	N/A
4.	break_time	date	3	N/A
5.	study_date	date	3	N/A
6.	userID	int	4	Foreign key
Total Size			**134**	

Table 3: Data design for progress tracking.

No	Field	Type	Size (byte)	Key
1.	progressID	int	4	Primary Key
2.	progress_percent	Varchar	100	N/A
3.	last_updated	Varchar	20	N/A
4.	status	Varchar	20	N/A
5.	progress_date	date	3	
6.	sessionID	int	4	Foreign key
Total Size			**151**	

Estimation of Storage

The data storage system houses the information detailed in Tables 1, 2, and 3. This segment computes the estimated data storage requirements for a period of 12 months.

Master Data Size

The Invite Entity, study session entity, and progress entity will each be generated only once throughout the application's entire lifecycle. Table 4, 5, and 6 detail the specifications for estimating the master data associated with inviting friends, study sessions, and progress tracking. The overall estimates for these entities amount to 4,050 bytes, 4,020 bytes, and 4,530 bytes respectively.

Table 4: Details for estimation for invite friend data.

Item	**Amount**	**Unit**
Size of invitation course	135	byte
Estimated number of data	30	quantity
Total Estimation of Master Data	**(135 * 30) = 4,050**	**byte**

Table 5: Details for estimation for setup study session data.

Item	**Amount**	**Unit**
Size of setup study session data	134	byte
Estimated number of data	30	quantity
Total Estimation of Master Data	**(134 * 30) = 4,020**	**byte**

Table 6: Details for estimation for progress tracking data.

Item	**Amount**	**Unit**
Size of progress tracking data	151	byte
Estimated number of data	30	quantity
Total Estimation of Master Data	**(151 * 30) = 4,530**	**byte**

Transactional Data

Invitations for friends, study sessions, and progress tracking data will be generated monthly. Table 7, 8, and 9 outline the estimation of transactional data, with total estimates of 82,570 bytes, 134,400 bytes, and 90,600 bytes respectively.

Table 7: Details of estimation for transactional data invite friend.

Item	**Amount**	**Unit**
Size of one invitation data	135	byte
Size of one user data	90	byte
Size of one session data	134	byte
Number of months	230	quantity
Total Estimation of transactional data	**(135 + 90 + 134) * 230 = 82,570**	**byte**

Table 8: Details of estimation for transactional setup study session.

Item	**Amount**	**Unit**
Size of one setup study session data	134	byte
Size of one user data	90	byte
Minimum number of study session request in a month	600	quantity
Total Estimation of transactional data	**(134 + 90) * 600 = 134,400**	**byte**

Table 9: Details of estimation for transactional progress tracking.

Item	**Amount**	**Unit**
Size of one progress tracking data	151	byte
Minimum of progress tracking in month	600	quantity
Total Estimation of transactional data	**151 * 600 = 90,600**	**byte**

Estimation of Data Storage

The total estimation of data storage for each is shown in table 10, 11 and 12

Table 10: Details of estimation for data storage invite friend.

Item	**Amount**	**Unit**
Total Masterdata	4,050	byte
Total transactional data	82,570	byte
Number of months	12	quantity
Total estimation of data storage	4050 + (82,570 * 12) = 994,890	byte
	= 0.9949	MB
	Approximately 1	**MB**

Table 11: Details of estimation for data storage setup study session.

Item	**Amount**	**Unit**
Total Masterdata	4,020	byte
Total transactional data	134,400	byte
Number of months	12	quantity
Total estimation of data storage	4020+ (134,400 * 12) = 1,616,820	byte
	1.542	MB
	Approximately 1.5	**MB**

Table 12: Details of estimation for data storage progress tracking.

Item	**Amount**	**Unit**
Total Masterdata	4,530	byte
Total transactional data	90,600	byte
Number of months	12	quantity
Total estimation of data storage	4,530 + (90,600 * 12) = 1,091,730	byte
	1.092	MB
	Approximately 1	**MB**

Estimation of File Storage

Each invited friend is linked to an image file, allowing them to create their own avatar. These images will be stored in a hierarchical path. The total estimated storage for images is 1260, as detailed in Table 13.

Table 13: Details of estimation for file storage

Item	**Amount**	**Size**
Size of hierarchical path	1	MB
Maximum size of avatar image	50	MB
Maximum number of avatar image	5	quantity
Number of days per year	365	quantity
Total Estimation of File Storage	**365 * 5 * (50 + 1) = 93,075**	**MB**

Estimation of Total Data Storage

This application oversees and organizes both structured and unstructured data. The total estimated storage is 93,082 MB, as outlined in Table 14.

Table 14: Details of estimation for total data storage.

Item	**Amount**	**Size**
Data Storage	7	MB
File Storage	1,260	MB
Total Estimation of File Storage	93,075 + 7 = 93,082	MB
	Approximately 100	**MB**

The specifics regarding the data storage environment are presented in Table 15.

Table 15: Details of estimation to host data storage.

Item	**Amount**	**Size**	**Unit**
Operating System	Windows Server 2022	64	GB
Relational Database Management System	MySQL Workbench 8.0	42.0	MB
Data Storage	Data and File	100	MB
Total Estimation		64.142	GB
Required Disk Size	**SSD**	**1**	**TB**
Number of disks		**1**	**quantity**