

Busan 201

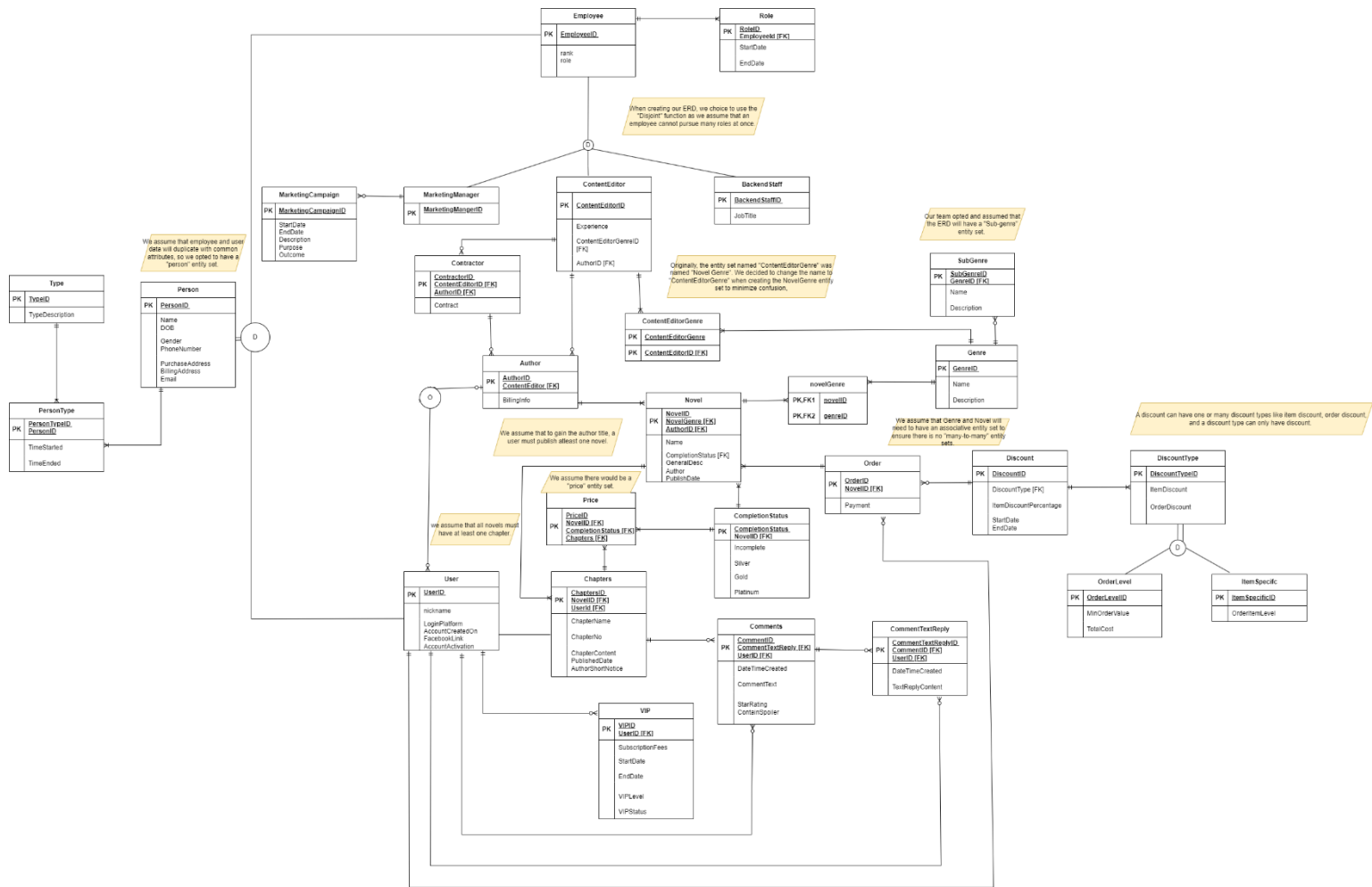
Design Assignment

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Part A,B,C)



*PNG attached as a file.

Part D

1) Analyse marketing campaign effectiveness

Question: Based on the ERD, how would you analyse the effectiveness of marketing campaigns in terms of new user attraction?

Marketing Campaign Table					
MarketingCampa	StartDate	EndDate	Description	Purpose	Outcome
MC001	2/03/2023	15/03/2023	Campaign conducted	user attraction	17% increase in website views. 9.7% increase in conversion rate.
MC002	12/04/2023	11/06/2023	Platform promotion	user attraction	58% increase in platform views. 27.6% increase in conversion rate.
MC003	11/06/2023	20/06/2023	Users were offered	user retention	67% increase in customer satisfaction score.
MC004	23/06/2023	1/07/2023	The campaign consisted	premium conversion	1.8% increase in VIP subscriptions.
MC005	6/07/2023	30/07/2023	Campaign consisted	user retention	29.5% increase in customer satisfaction score.
MC006	17/08/2023	17/09/2023	Campaign consisted	user attraction	76% increase in website views. 42.3% increase in conversion rate.
MC007	24/10/2023	31/10/2023	The campaign consisted	premium conversion	17.6% increase in VIP subscriptions.
MC008	28/11/2023	3/12/2023	Campaign consisted	user attraction	11.4% increase in platform views. 4.5% increase in conversion rates.
MC009	12/12/2023	17/12/2023	Discount and incentive	user retention & user	66.9% increase in user satisfaction levels. 57.2% increase in conversion rates.
MC010	30/12/2023	7/01/2023	Campaign consisted	premium conversion	34.6% increase in VIP member subscriptions.

When considering the effectiveness of marketing campaigns to garner new user attraction for NiceReads, our data shows that there is a direct and positive correlation between the two. NiceReads has conducted numerous marketing campaigns over a 10 month period, many with the sole purpose of gaining user attraction. These campaigns target an expanded range of individuals, with no distinct group addressed.

To retrieve this data, the entity set “MarketingCampaigns” was utilized.

- As displayed in the sample data, the campaign conducted between the 2nd of March 2023 and the 15th of March 2023 had a positive impact on both user attraction and new user registration. The use of social media marketing caused 17% increase in website views, and a 9.7% increase in new user registration (as shown by the conversion rate.)
- The campaign carried out between the 12th of April 2023, and the 11th of June 2023 had a significant impact on new user attraction. Throughout the campaign period, where NiceReads was advertised on Meta platforms, there was a 58% increase in platform views, and a 27% increase in new user registration.
- Between the 17th of August and the 17th of September 2023, a marketing campaign consisting of providing discounts at the user registration level displays notable increases in user attraction at 76% increase in website views, and a 42.3% increase in new user registration.
- NiceReads performed a social media marketing campaign between the 28th of November, and the 3rd of December 2023 through paid advertising. The campaign recorded a 11.4% increase in platform views, and a 4.5% increase in new user registration.
- A marketing campaign focused on user retention and user attraction was undertaken between the 12th of December, and the 17th of December 2023. Current Active users

received incentives when referred family members and friends became a registered user on NiceReads. The outcome of this campaign indicated a 57.2% increase in new user registration.

As displayed by the sample data above, a consensus can be made that marketing campaigns with the purpose of user attraction have a positive effect on new user attraction for NiceReads. Data shows that during specific campaigns, there are heightened levels of new user registrations. Furthermore, it can be noted that campaigns involving discounts and incentives have greater outcomes than social media marketing campaigns.

2. Content editor's influence on novel genres

Question: Utilizing the ERD, propose how to evaluate which content editor has the most significant impact on a particular novel genre based on the number of authors of that genre they advise and the completion status of those author's novels within that genre.

- Firstly, we started off by displaying all the entity sets that is related to evaluate which content editor has the most significant impact on a particular novel genre based on the number of authors of that genre they advise and the completion status of those author's novels within that genre.

Content Editor Table				Content Editor Genre Table					Genre Table			
Content Editor ID	Experience	Content Editor Genre ID	Author ID	Content Editor Genre	Content Editor ID	Genre ID	Name	Sub Genre	Content Editor ID			
C001	Intern	CG01	A001	Thriller	C001	G001	Thriller	Crime-Thriller	C001			
C002	Lead	CG02	A002	Thriller	C008	G008	Thriller	Crime-Thriller	C008			
C003	Intern	CG03	A003	Romance	C007	G007	Romance	Comedy-Romance	C007			
C004	Senior	CG04	A004	Mystery	C002	G002	Mystery	Mystery-Romance	C002			
C005	Lead	CG05	A005	Horror	C004	G004	Horror	Horror-Comedy	C004			
C006	Senior	CG06	A006	Horror	C006	G006	Horror	Crime-Horror	C006			
C007	Intern	CG07	A007	Crime	C005	G005	Crime	Mystery-Crime	C005			
C008	Senior	CG08	A008	Comedy	C003	G003	Comedy	Horror-Comedy	C003			
C009	Lead	CG09	A009	Comedy	C009	G009	Comedy	Comedy-Romance	C009			
C010	Lead	CG10	A010	Comedy	C010	G010	Comedy	Thriller-Comedy	C010			

Novel Genre Table		Novel					
Novel ID	Genre ID	Novel ID	Novel Genre	Name	Completion Status	Author	Publish Date
N001	G001	N001	Thriller	Silent Echoes	Silver	Caleb Westfield	March 12, 2021
N002	G002	N008	Thriller	Edge of Deception	Gold	Derek Armstrong	August 21, 2020
N003	G003	N007	Romance	Under the Parisian Sky	Incomplete	Isabelle Fontaine	February 14, 2024
N004	G004	N002	Mystery	The Last Manuscript	Silver	Elena Moreno	October 5, 2018
N005	G005	N004	Horror	Whispers in the Dark	Gold	Clarice Halloway	September 13, 2019
N006	G006	N006	Horror	The Hollow	Platinum	Mira St. James	June 15, 2022
N007	G007	N005	Crime	Shadows of Guilt	Platinum	Vincent Dale	April 30, 2017
N008	G008	N003	Comedy	Misadventures of a Reluctant Cupid	Incomplete	Samuel T. Hopkins	June 24, 2024
N009	G009	N009	Comedy	The Accidental Hero	Silver	Leo Fitzpatrick	May 1, 2022
N010	G010	N010	Comedy	The Billionaire's Blunder	Silver	Judy Carmichael	November 10, 2023

Completion Status Table					
Completion Status	Novel ID	Incomplete	Silver	Gold	Platinum
Silver	N001	0	1	0	0
Silver	N002	0	1	0	0
Incomplete	N003	1	0	0	0
Gold	N004	0	0	1	0
Platinum	N005	0	0	0	1
Platinum	N006	0	0	0	1
Incomplete	N007	1	0	0	0
Gold	N008	0	0	1	0
Silver	N009	0	1	0	0
Silver	N010	0	1	0	0

- To select the relevant data, we first filtered the Content Editor Genre Table for entries where the genre is Thriller. Joined this filtered data with the Content Editor Table to get details about the content editors who edit thriller novels.

Content Editor ID	Experience	Content Editor Genre ID	Author ID	Content Editor Genre
C001	Intern	CG01	A001	Thriller
C008	Senior	CG08	A008	Thriller
Genre ID	Content Editor ID	Novel ID		
G001	C001	N001		
G008	C008	N008		
Novel ID	Genre ID	Name	Completion Status	
N001	G001	Silent Echoes	Silver	
N008	G008	Edge of Deception	Gold	

- Then we joined the novel Genre Table this to find all novels classified under the thriller genre. Then we joined this data with the Novel table to get the Novel details and Completion status of the Thriller novels.
- From this result we can see that Content editor C008 has the most significant impact on the thriller novel genre as they managed to attain the “Gold” completion status by working with author A008 to publish the novel “Edge of Deception”. It is also impressive to see that Content editor C001, as an intern has managed to attain a “Silver” completion status by working with author A001 to publish the “Silent Echoes” novel which is the second Novel from our sample data falling under the “Thriller” genre.

3. User interaction and engagement analysis

Question: How would you determine the most engaging novels on the platform for VIP vs non-VIP users using the ERD?

VIP TABLE					COMMENTS TABLE				
VIP ID	User ID	Subscription	StartDate	EndDate	Comment ID	Comment Text	User ID	Star Rating	Contain Spoiler
V001	U003	1	1/06/22	1/06/23	CO01	An eerie, yet profoundly moving story.	U001	3	0
V002	U004	1	23/06/21	23/06/22	CO02	A compelling dive into a writer's legacy.	U002	3	0
V003	U005	1	9/09/23	9/09/24	CO03	Hilariously heartfelt misadventures in matchmaking!	U003	5	1
V004	U007	1	1/02/24	1/02/25	CO04	Chillingly mysterious with each whispered secret.	U004	4	1
V005	U010	1	22/04/23	22/04/24	CO05	A gripping tale of suspense and redemption.	U005	2	0
					CO06	Beautifully haunting. It stayed with me.	U006	2	0
					CO07	Romantically enchanting—a true Parisian escape.	U007	1	0
					CO08	Intrigue and twists at every turn!	U008	5	1
					CO09	Unexpectedly inspiring and full of courage.	U009	1	1
					CO10	A rich blend of humor and humility.	U010	2	1
CHAPTER TABLE									
User ID	Nickname	Account Creat	Facebook Link	Chapters ID	Novel ID	User ID	Chapter Name	Chapter Number	Published Date
U001	Ashley	1/01/24		1 CH01	N001	U001	The Quiet Beginnings		1 March 12, 2021
U002	Jordan	5/12/22		1 CH02	N002	U002	Words in the Attic		4 October 5, 2018
U003	Becky	1/06/22		1 CH03	N003	U003	Arrows Gone Astray		5 June 24, 2024
U004	Amber	20/06/20		0 CH04	N004	U004	Nightfall Secrets		2 September 13, 2019
U005	Sam	9/09/23		1 CH05	N005	U005	Chasing Shadows		8 April 30, 2017
U006	Em	8/11/22		0 CH06	N006	U006	Whispers of the Old		4 June 15, 2022
U007	Sarah	9/11/22		1 CH07	N007	U007	Hearts Alight		7 February 14, 2024
U008	Tobi	4/05/24		1 CH08	N008	U008	The Veil of Truth		1 August 21, 2020
U009	AJ	1/01/24		0 CH09	N009	U009	Trials by Fire		3 May 1, 2022
U010	Charlie	12/03/23		0 CH10	N010	U010	Redemption of the Rich		10 November 10, 2023

NOVEL TABLE					
Novel ID	Novel Genre	Name	Completion St	Author	Publish Date
N001	Thriller	Silent Echoes	Silver	Caleb Westfiel	March 12, 2021
N002	Mystery	The Last Manuscript	Silver	Elena Moreno	October 5, 2018
N003	Comedy	Misadventures of a Reluctant Cupid	Incomplete	Samuel T. Hop	June 24, 2024
N004	Horror	Whispers in the Dark	Gold	Clarice Hallow	September 13, 2019
N005	Crime	Shadows of Deception	Platinum	Vincent Dale	April 30, 2017
N006	Horror	The Hollow	Platinum	Mira St. James	June 15, 2022
N007	Romance	Under the Parasol	Incomplete	Isabelle Fontaine	February 14, 2024
N008	Thriller	Edge of Deception	Gold	Derek Armstrong	August 21, 2020
N009	Comedy	The Accidental Billionaire	Silver	Leo Fitzpatrick	May 1, 2022
N010	Comedy	The Billionaire's Secret	Silver	Judy Carmichael	November 10, 2023

novels for the VIP Members. This is because users 3 and 4 who are VIPs, had thought compelling comments to share on the chapters within the Novel. Furthermore, the chapter in the novel "The Misadventures of a Reluctant Cupid" has a star rating of 4. The chapter in the novel "Whispers in the Dark" has a star rating of 5. This indicates heightened engagement due to increased appreciation for the novel. The comments for these chapters solidify this theory.

Based on our ERD we can determine the most engaging novels on the platform for VIP vs non-VIP users. After carrying out our analysis we found that "The Misadventures of a Reluctant Cupid" and "Whispers in the Dark", were the most engaging

- For non-VIP members, based on the sample data as shown above, we understood that the novels "Silent Echoes", "The Last Manuscript" and "The Edge of Deception" are the most engaging. This is as our sample data shows the comments and star ratings made by both VIP and non-VIP users. In our case, for non-VIP users, the highest star ratings and engaging comments were awarded to chapters in these novels. The novel "The Edge of Deception" is determined to be the most engaging for non-VIP users, as a chapter in the novel has a star rating of 5, which is the highest rating possible. This shows keen and thorough engagement, as often when novels or chapters are awarded high ratings, it compels new users to engage with it. Furthermore, the comment published regarding the chapter in the novel "The Edge of Deception" solidifies this theory.

Part E:

i) Author :

Default Value: A default value is automatically assigned to a field if no value is provided. In the "Authors" relation, the PhoneNumber field can have a default value of "Unknown" if not specified. This prevents the field from being left blank and ensures data consistency.

Format controls:

For the email field in the "Authors" relation, a format control can ensure that every email address entered matches the pattern (text,@ sign, domain,.,extension). In this format control we can ensure nothing goes into the email field unless it follows those controls and format.

Range Control:

Range control limits the range of values which can be entered into the field. For the DOB field in the "Authors" relation, a range control might specify that only years from 1900 to the current year are acceptable. This prevents entering future years or unlikely distant past years.

Referential Integrity:

If one table references the primary key of another, any change in the primary key must be reflected in all referencing tables. Changes in novel relations should happen in the author relation first.

Null Values Control

It includes constraints that either allow or don't allow nulls in certain fields. In the "Authors" relation, the email field might be set to NOT NULL to ensure that every author has a contact email.

ii) Comment

Default Value

A default value is automatically assigned to a field if no value is provided. In the "Comments" relation, the StarRating field might have a default value 5 stars.

Format Controls

These controls ensure that the data entered into a database follows a specific format. For the DateTimeCreated field in the "Comments" relation, a format control can ensure that every entry matches the format YYYY-MM-DD.

Range Control

Range control limits the range of values that can be entered into a field. For the CommentsText field a range control might specify that comments must be less than 100 characters.

Referential Integrity

This ensures that a foreign key value(CommentTextReply) always references an existing valid record in another table (Comments(pk)). If you try to make changes in CommentText Reply Make sure to update it in the "Comments" table too. This keeps all the information correct and matching.

Null Values Control: It includes constraints that either allow or don't allow nulls in certain fields. In the "Comments" relation, the comment_text field might be set to NOT NULL to ensure that every comment has text.

Part F:

Situation 1:

Denormalization can be utilized to improve performance when converting our logical design to a physical table, specifically when considering the "Comments" and "CommentTextReply" entity sets.

- Denormalization can be used to ensure efficiency in regard to the "CommentTextReply" entity set in our ERD. This is as it is an associative entity set between "Comments" and "User". This relationship prevents the occurrence of "many-to-many" connections. By deormalizing, our model will be improved as when converting it to a physical model, it will reduce the expenses and costs that accompany joining databases and entity sets. This increases the storage and resources necessary to store this information. This will optimize the performance of the "Comments" and "CommentTextReply" queries.
- The denormalized design may introduce trade-offs regarding efficiency as when the queries "Comment" and "CommentTextReply" are optimized and denormalized, the performance of these three queries will be enhanced, whereas the other queries [entities] in our model will be de-optimized. The trade-off for this specific scenario is the performance levels for other queries, which have not been denormalized.

Situation 2:

Performance can be improved by denormalization to convert our logical model to physical tables when regarding the "Discount", "DiscountType" and relating entity sets.

- Denormalization can be utilized when considering the "DiscountType", "OrderLevel" and "ItemSpecifc" entities where a one-to-one relationship is present. Our model will be improved when converting it to a physical level as denormalization cuts down costs and expenses that come with related queries. Furthermore, in this situation, the DiscountType, OrderLevel and ItemSpecifc can be grouped into one single table in the physical model as no data for either three entities requires security and protection safeguards.

- The denormalized design may introduce trade-offs regarding efficiency as when denormalization occurs, this can cause duplications of data. In turn, this can cause the database to store excessive data. This can hinder efficiency by slowing down the performance of the whole database. In this case, discount type and percentages can be duplicated.