SECTION A

Data Modeling

In this section we will identify the entities that need to take part to our database plan as those were imposed from the director of company that made the request. A copy of the original message can be previewed in while moving to the Appendix C at the end of this assignment.

The entities will be semantically referenced in this section and the assumptions that were made for each will be presented here as well. Distinct technical overview will follow for each table next.

Users

Primary entity that is available for storing the registered user's identification data for our system. Therefore all attributes are generated to store information that distinctively relate to the user's identity. Status attribute unveils the role state of the user.

- Username is unique for each user
- Status attribute is given char(1) date type only for practice otherwise it should be assigned to char(2) or char(3) more effectively
- Status attribute restrains to values like: active(a), banned temporarily(b), banned permanently(p)

Plans

Primary entity that stores the available plans made for the users of the system.
Status attribute unveils a plan state of the system.

- Plan ID attribute is given char(1) data type only for practice, otherwise char(2)/chr(3)
- Status attribute restrains values as: active(a), inactive(i)

Files

Primary entity that categorizes the file types available to the file hosting system.

File Quota

Bridge entity that works an inventory for the system, nodding distinct file types, user plans and actions followed and matches along the maximum available file size for each procedure

- Primary key is a ternary combination of user plan, action taken and file types

- Action attribute restrains to values like: download(d), upload(u)
- Max size attribute will be indexed since the values stored will be retrieved extensively by the system
- Max size attribute records data as “kilobytes”

Subscription

Bridge entity that nodes a user identity along with the plan employed by the user and stamps the date of the purchase to the system. The entity is used extensively, primarily to check that a users plan is enabled within a certain time limit, which for the case is a month. JKMJHK jhhjgjy

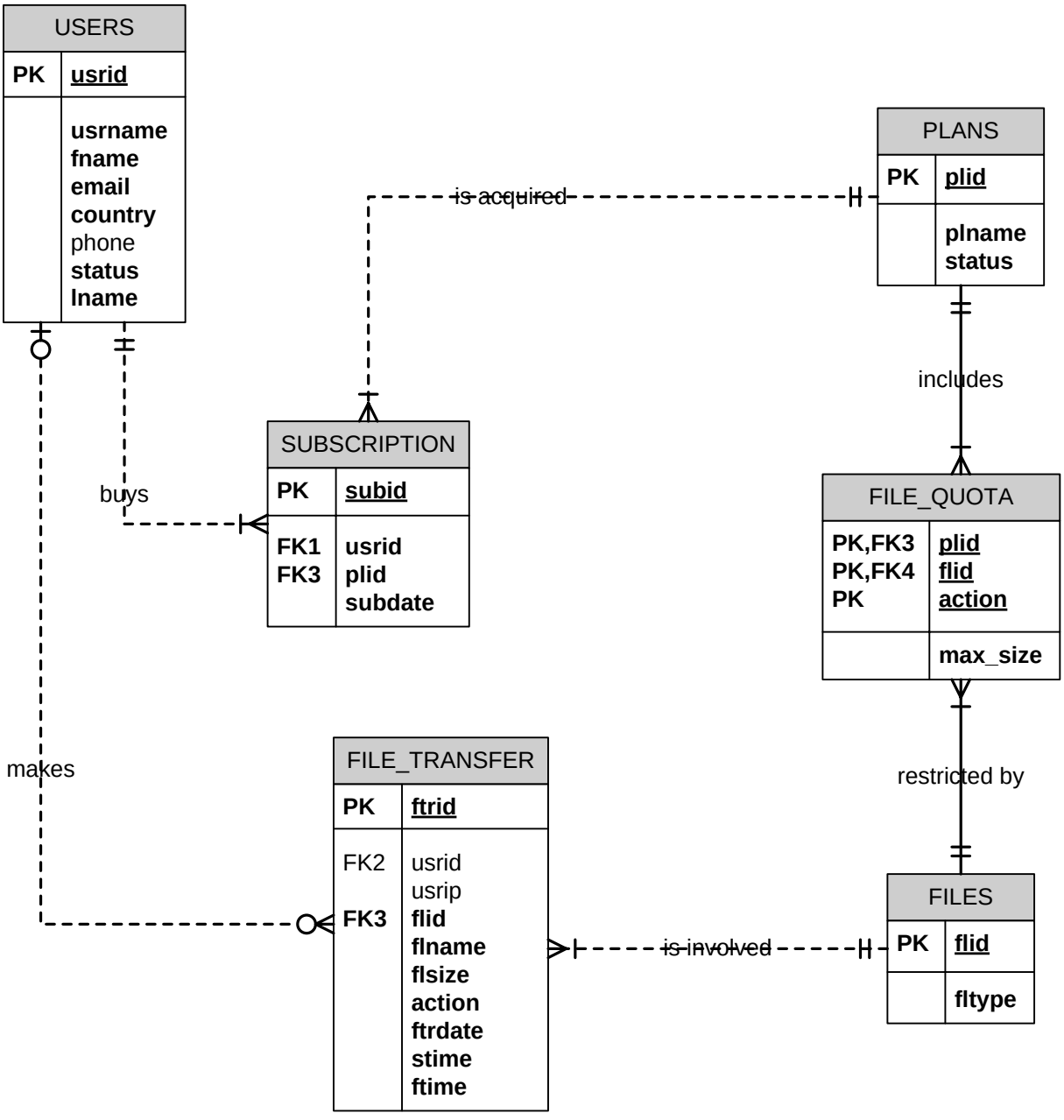
- Subscription date attribute is indexed since the system will fluently trigger the stored values

File Transfer

Bridge entity that nodes a user identity along with a file type that was used and stamps detailed information of the transaction to the system. Action attribute unveils the type of transaction made.

- Start time and Finish time attributes are deliberately assigned to “nvarchar2(5)” for practicing issues since the two attributes do not necessarily play any critical role during the assignment. The proper data type for the two attributes is the date type
- Finish time has deliberately remained to “not null” even though the first time the entity is approached by a system routine to add data to it, this attribute will inevitably recorded as “null” (the transaction will have not be concluded yet)
- File size attribute records data as “kilobytes”
- Action attribute restrains to values like: download(d), upload(u)
- User ID & User IP attributes have deliberately remained as “null” since the File Transfer entity will store data for both registered and non registered users

Entity-Relationship Diagram



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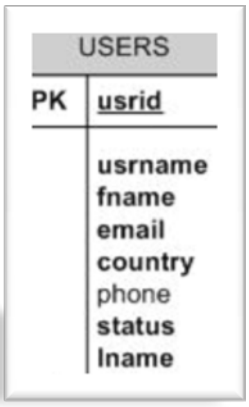
Users



Semantic Name	DB Name	Type	Constraint	Other
User ID	Usrid	Numeric(10)	Pk: usr_usrid_pk	Sq: usr_usrid_sq
User Name	Usrname	Nvarchar2(30)	Uq: usr_usrn_uq, Nn	Idx: usr_usrn_idx
First Name	Fname	Nvarchar2(30)	Nn	-
Email	Email	Nvarchar2(50)	Uq: usr_eml_uq, Nn	Idx: usr_eml_idx
Country	Country	Char(3)	Nn	-
Phone	Phone	Nvarchar2(20)	Uq: usr_ph_uq	-
Status	Status	Char(1)	Ck: usr_stat_ck ➔ In ('a','b','p'), Nn	Bidx:usr_stat_bidx
Last name	Lname	Nvarchar2(30)	Nn	Idx: usr_lnm_idx

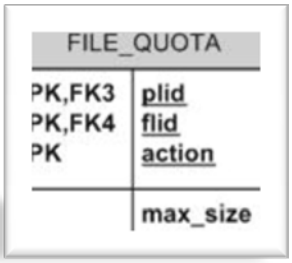
Plans

Semantic Name	DB Name	Type	Constraint	Other
Plan ID	Plid	Char(1)	Pk: pl_plid_pk	-
Plan Name	Plname	Nvarchar2(30)	Uq:pl_pln_uq, Nn	-
Status	Status	Char(1)	Ck: pl_stat_ck ➔ In('a','I'), Nn	Bidx: pl_stat_bidx

Files

Semantic Name	DB Name	Type	Constraint	Other
File ID	Flid	Char(3)	Pk	-
File type	Fltype	Nvarchar2(50)	Uq: fl_fltype_uq, Nn	-

File Quota



Semantic Name	DB Name	Type	Constraint	Other
Plan ID	Plid	Char(1)	Pk: flq_pl_fl_act_pk Fk:flq_plid_fk ➔ Plans(plid)	-
File ID	Flid	Char(3)	Pk: flq_pl_fl_act_pk Fk: flq_flid_fk ➔ Files(flid)	-
Action	Action	Char(1)	Pk: flq_pl_fl_act_pk Ck: flq_act_ck ➔ In('u','d')	-
Max Allowed Size	Max_size	Numeric(10)	Ck: fql_mxsz_ck ➔ (max_size>0) Nn	Idx: flq_mxsz_idx

Subscription

Semantic Name	DB Name	Type	Constraint	Other
Subscription ID	Subid	Numeric(15)	Pk: sbsr_subid_pk	Sq: sbsr_subid_pk
User ID	Usrid	Numeric(10)	Fk: sbsr_usrid_fk ➔ Users(flid) , Nn	-
Plan ID	Plid	Char(1)	Fk: sbsr_plid_fk ➔ Plans(plid)	-
Subscription Date	Subdate	Date	Nn	Idx: sbsr_sbd_idx

File Transfer

Semantic Name	DB Name	Type	Constraint	Other
File Transfer ID	Ftrid	Numeric(20)	Pk	Sq: ftr_ftrid_sq
User ID	Usrid	Numeric(10)	Fk: ftr_usrid_fk	-
User IP	Usrip	Nvarchar2(15)	-	-
File ID	Flid	Char(3)	Fk: ftr_flid_fk ➔ Files(flid) , Nn	-
File Name	Flname	Nvarchar2(70)	Nn	-
File Size	Flsize	Numeric(10)	Nn	-
Action	Action	Char(1)	Ck:usr_stat_ck ➔ In ('u','d') , Nn	Bidx: ftr_act_bidx
File Transfer Date	Ftrdate	Date	Nn	Default: sysdate
Transfer Start	Stime	Nvarchar(5)	Nn	-
Transfer Finish	Ftime	Nvarchar(5)	Nn	-

Description

In this section we will suggest our client with some extra functionality that we believe it would be meaningful to integrate to the system. In our case the additional function that emerges, deals with providing private space to our users that result as a benefit for taking certain actions while using the system.

Subscriptions Reward

Users are reward gradually whenever they reach to subscribe for certain number of times and at each level we offer for free private space online. In this step we regard the subscription plan as either “silver” or “gold” and the size that is offered reflects distinctively and accordingly to each. Nevertheless, only for practical reasons, we do not make an offer as “silver” & “golden” plans are employed by a user in conjunction, while in a true case scenario we be necessary.

Referencing Reward

Users are rewarded whenever they achieve to induce other users to register our system, thus under a certain number of references made for a person leading the way and motivating others to enter our system, this user will also obtain private online space in proportion.

In both cases the space that is offered will gradually increase as the user meets different levels of the aforementioned actions.

Assumptions

- The system will not support purchasing of online space, thus will provide it only as a benefit
- Users can upload any file on their private space and we do not keep track of file types
- At the time a user is temporarily/permanently banned will still be able to use the online space that has been offered
- User space is not assigned to space limit only for practicing reasons; otherwise a constraint activity would be generated to assure that a maximum online space exists.
- User space recording do not incorporate transaction start/end timings while only for practicing

Users

Primary entity "Users" will need some modification since we need to add a new attribute "usrrefid" that semantically resolves to "Referenced by UserID" and will remain "Null" while a user was not referenced to our system by another user.

Semantic Name	DB Name	Type	Constraint	Other
Reference by User ID	Usrrefid	Numeric(6)	Fk: usr_usrrefid ➔ User(usrid)	-

✓ The **USER** entity remains as seen in previous chapter and only add the above attribute

Grant Space

Primary entity that is available for providing a guiding map to the system in order to address the space offering across a series of actions that have been taken by users. This entity applies meaning to both "subscribed 'x' times" or "reference 'x' users" cases qualified by the "sign" attribute that addresses the process corresponding.

- "Sign" & "Gnumber" are in conjunction the primary key of the entity
- Sign attribute restrains to values like: reference(r), silver(s), gold(g)
- "Gnumber" attribute reflects the limit values that have settled (like 5, 10, 20) for certain activities

Semantic Name	DB Name	Type	Constraint	Other
Sign of Activity	Sign	Char(1)	Pk : grsp_snum_pk , Ck: grsp_sign_ck ➔ In('r','s','g')	-
Grant-for Number	Gnumber	Numeric(5)	Pk : grsp_snum_pk , Ck: grsp_gnum_ck , ➔ In (5,10,20)	-
Grant Space	Gspace	Numeric(10)	Ck: grsp_sign_ck ➔ (>0) , Nn	-

User Space

Bridge entity that combines and records the users identity along with their "referencing" & "subscribing" activity on the system and eventually induces online space increment to those that have met settled limits.

- Sign attribute restrains to values like: reference(r), silver(s), gold(g)
- "Gnumber" attribute reflect the limit values like 5, 10, 20

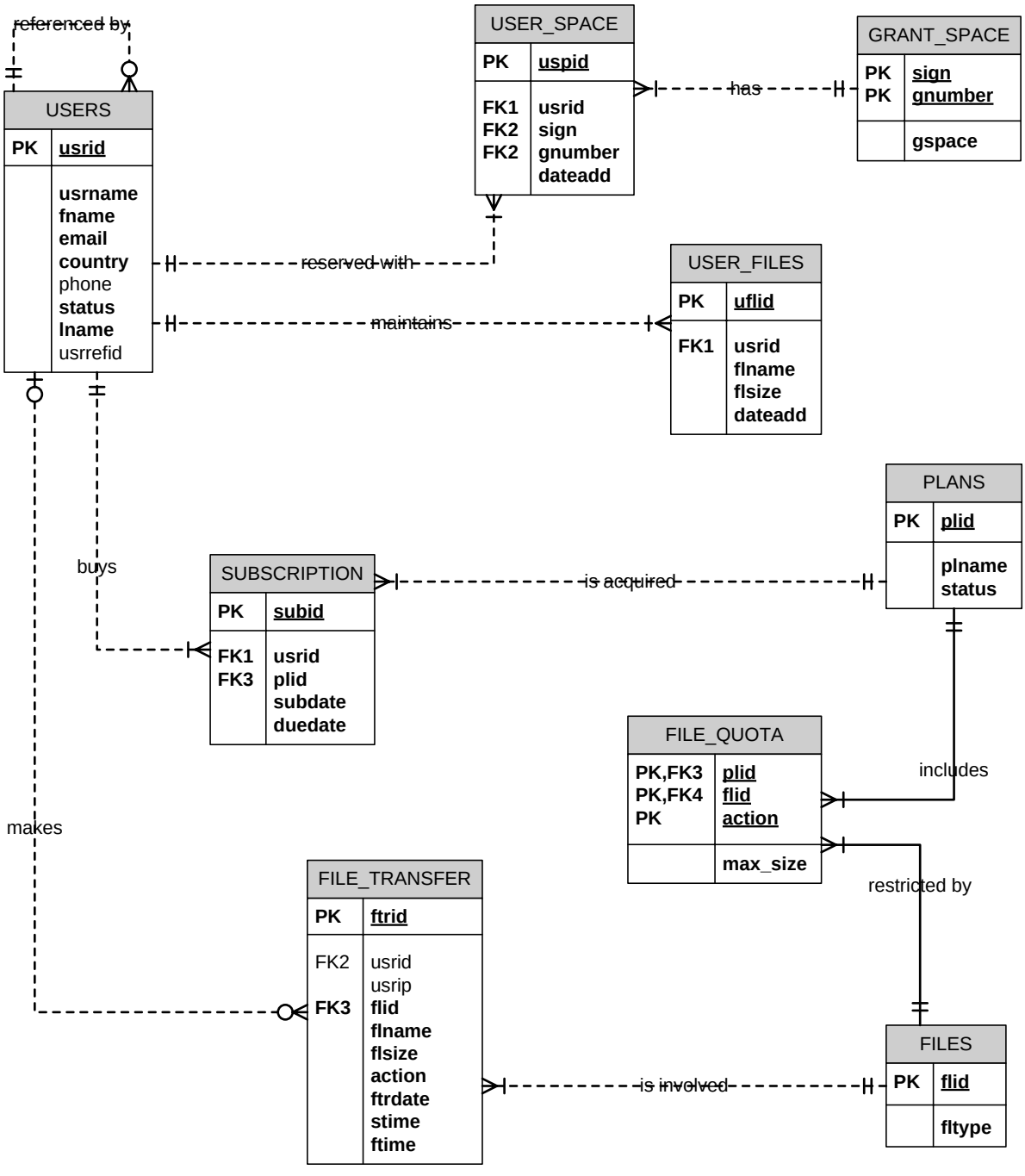
Semantic Name	DB Name	Type	Constraint	Other
User Add Space	Uspid	Numeric(10)	Pk : uspc_uspid_pk	Sq: uspc_uspid_sq
User ID	Usrid	Numeric(6)	Fk: uspc_usrid_fk ➔ Users(usrid) , Nn	-
Sign of Activity	Sign	Char(1)	Fk: uspc_sign_fk ➔ Grant_space(sign, gnumber) , Nn	-
Grant-for Number	Gnumber	Numeric(5)	Fk: uspc_sign_fk ➔ Grant_space(sign, gnumber) , Nn	-
Date Space Added	Dateadd	Date	Nn	-

User Files

Primary entity that records the files that each user has prospectively uploaded in his/her online private space followed by the date that the transaction took place.

Semantic Name	DB Name	Type	Constraint	Other
User Online Files	Uflid	Numeric(15)	Pk : ufl_uflid_pk	Sq: ufl_uflid_sq
User ID	Usrid	Numeric(6)	Fk: ufl_usrid_fk ➔ Users(usrid) , Nn	-
File Name	Flname	nvarchar2(100)	Nn	-
File Size	Flsize	Numeric(10)	Ck: ufl_flsz_ck ➔ (>0) ,	-
Date File Added	Dateadd	Date	Nn	-

Entity-Relationship Diagram – Enhanced Model



Picture B