**Customer Work Management Web Application Data Schema Design**

**V1.0**

**Copyright ©2017 Raymond Guo. All rights reserved**

**---------The beginning of the list of System Administration tables and shared tables----------**

The below tables are used for system administration and shared for all users. They are not directly used for the users. They must be created even if there are no users in the system.

Table: master\_user\_list

|  |  |  |
| --- | --- | --- |
| master\_user\_ID | int | PK, linked to master\_user table |
| account\_service\_plan | tinyint | FK, linked to master\_user\_service\_plan table. (Plan: 1: demo, 2: standard, 3: premium, 4: enterprise) |
| account\_status | tinyint | FK, linked to master\_user\_account\_status table. (Status: active, suspended, disabled, closed) |
| account\_created\_date\_time | datetime |  |
| account\_billing\_ID | int | FK, linked to master\_user\_billing table |
| database\_table\_name\_postfix | int | Raymond’s comment: the postfix is attached to the end of the name of the tables used for the users. |
| description | varchar(2000) |  |
| TBD |  |  |
| TBD |  |  |

Table: master\_user\_service\_plan

|  |  |  |
| --- | --- | --- |
| service\_plan\_ID | tinyint | Value: 1, 2, 3, 4 |
| service\_plan | varchar(20) | Value: demo, standard, premium, enterprise, |

Table: master\_user\_account\_status

|  |  |  |
| --- | --- | --- |
| account\_status\_ID | tinyint | Value: 1, 2, 3, 4 |
| account\_status | varchar(20) | Value: active, suspended, disabled, closed, |

Table: master\_user\_billing table

|  |  |  |
| --- | --- | --- |
| master\_user\_billing\_ID | int | PK |
| master\_user\_payment\_card\_ID | int | FK, linked to master\_user\_payment\_card table |
| TBD |  |  |

Table: master\_user\_payment\_card

|  |  |  |
| --- | --- | --- |
| master\_user\_payment\_card\_ID | int |  |
| payment\_credit\_card\_number | int |  |
| payment\_credit\_card\_name | varchar(100) |  |
| payment\_credit\_card\_expiration\_month | tinyint |  |
| payment\_credit\_card\_expiration\_year | tinyint |  |
| payment\_credit\_card\_csv\_code | tinyint |  |
| payment\_credit\_card\_zip\_code | tinyint |  |
| payment\_credit\_card\_status | varchar(20) | Value: valid, expired |

Table: passcode\_receive\_device

|  |  |  |
| --- | --- | --- |
| device\_ID | tinyint | Value: 1,2, |
| device\_name | varchar(50) | Value: mobile phone, email, |

Table: business\_type

|  |  |  |
| --- | --- | --- |
| business\_type\_ID | smallint | value: 1,2,3,4,5,6,....... |
| business\_type | varchar(200) | Value: law firm/attorney, accounting firm/accountant, photography, electrician,...... |

Table:time\_zone

|  |  |  |
| --- | --- | --- |
| time\_zone\_ID | tinyint | value: 1,2,3,4,5,6,....... |
| Refer to <https://dev.mysql.com/doc/refman/5.7/en/mysql-tzinfo-to-sql.html> | | |

Table: country

|  |  |  |
| --- | --- | --- |
| country\_ID | tinyint | value: 1,2,3,4,5,6,....... |
| Refer to <https://github.com/raramuridesign/mysql-country-list/blob/master/mysql-country-list.sql> | | |

Table: billing\_currency

|  |  |  |
| --- | --- | --- |
| billing\_currency\_ID | smallint | PK, value: 1,2,3,4,5,6,... |
| Refer to <https://github.com/gregormck/multi-currencies-iso-codes-symbols-positions/blob/master/currencies.txt> | | |

**-------------- The end of the list of System Administration tables and shared tables ------------**

**------------------------------- The beginning of the list of User tables --------------------------------**

The user tables are used for users (master users). Each master user has one set of these tables. The end of table names have a postfix which is the user ID of the master user. For example, if the master user’s ID is 20028066, then the names of the below tables all have postfix 20028066. For example, master\_user\_20028066, master\_business\_20028066, staff\_user\_20028066, etc. Please see the illustration below.

Table:

master\_user\_list

master\_user\_ID:

20082066

20082072

20082329

20090578

…...

Table:

master\_user\_20082066

Table:

staff\_user\_20082066

Table:

master\_business\_20082066

Table:

customer\_account\_20082066

Table:

customer\_work\_20082066

Tables:

xxxxxxxx\_20082066

xxxxxxxx\_20082066

xxxxxxxx\_20082066

Table:

master\_user\_20082072

Table:

staff\_user\_20082072

Table:

master\_business\_20082072

Table:

customer\_account\_20082072

Table:

customer\_work\_20082072

Tables:

xxxxxxxx\_20082072

xxxxxxxx\_20082072

xxxxxxxx\_20082072

Table:

master\_user\_20082329

Table:

staff\_user\_20082329

Table:

master\_business\_20082329

Table:

customer\_account\_20082329

Table:

customer\_work\_20082329

Tables:

xxxxxxxx\_20082329

xxxxxxxx\_20082329

xxxxxxxx\_20082329

Table: master\_user\_[postfix]

|  |  |  |
| --- | --- | --- |
| master\_user\_ID | int | PK |
| username | varchar(50) |  |
| hashed\_password | varchar(100) |  |
| security\_question | varchar(100) |  |
| security\_question\_answer | varchar(100) |  |
| first\_name | varchar(100) |  |
| last\_name | varchar(100) |  |
| email\_address | varchar(254) |  |
| mobile\_phone | varchar(50) |  |
| other\_phone | varchar(50) |  |
| enable\_2\_factor\_authentication\_login | tinyint | Value: 0: no, 1: yes |
| send\_passcode\_to\_device\_ID | tinyint | FK, linked to passcode\_receive\_device table |
| master\_user\_business\_ID | int | FK, linked to master\_user\_business table |

Table: master\_user\_business\_[postfix]

|  |  |  |
| --- | --- | --- |
| master\_user\_business\_ID | int | PK |
| business\_name | varchar(200) |  |
| business\_type\_ID | smallint | FK, Linked to business\_type table |
| business\_time\_zone\_ID | tinyint | FK, Linked to time\_zone table |
| business\_email | varchar(254) |  |
| business\_phone\_number | varchar(50) |  |
| business\_fax\_number | varchar(50) |  |
| business\_address\_street | varchar(100) |  |
| business\_address\_room\_number | varchar(100) |  |
| business\_address\_city | varchar(100) |  |
| business\_address\_state\_province | varchar(100) |  |
| business\_addresss\_country\_ID | int | FK, linked to country table |
| business\_description | varchar(1000) |  |
| business\_logo | binary |  |

Table: staff\_user\_[postfix]

|  |  |  |
| --- | --- | --- |
| staff\_user\_ID | int | PK |
| master\_user\_business\_ID | int | FK, linked to master\_user\_business table |
| username | varchar(50) |  |
| hashed\_password | varchar(100) |  |
| security\_question | varchar(100) |  |
| security\_question\_answer | varchar(100) |  |
| first\_name | varchar(100) |  |
| last\_name | varchar(100) |  |
| email\_address | varchar(254) |  |
| mobile\_phone | varchar(50) |  |
| other\_phone | varchar(50) |  |
| enable\_2\_factor\_authentication\_login | tinyint | Value: 0: no, 1: yes |
| send\_passcode\_to\_device\_ID | tinyint | FK, linked to passcode\_receive\_device table |
| job\_title | varchar(100) |  |
| business\_department\_ID | tinyint | FK, linked to business\_department table |
| work\_time\_zone | tinyint | FK, Linked to time\_zone table |
| work\_email | varchar(254) |  |
| office\_phone | varchar(50) |  |
| office\_address\_street | varchar(100) |  |
| office\_address\_room\_number | varchar(100) |  |
| office\_address\_city | varchar(100) |  |
| office\_address\_state\_province | varchar(100) |  |
| office\_addresss\_country | tinyint | FK, linked to country table |
| user\_note | varchar(1000) |  |
| staff\_personal\_photo | binary |  |
| created\_date\_time | datetime |  |
| enable\_access | tinyint | value: 0: no, 1: yes  Note: used by Master User to control the access of the staff user |

Table: business\_department\_[postfix]

|  |  |  |
| --- | --- | --- |
| business\_department\_ID | tinyint | value: 1,2,3,4,5,6,...... |
| business\_department\_name | varchar(100) | Value: sales, marketing, finance, technical support, customer service, administrative, custom values (master user can set the custom value) |

Table: customer\_account\_[postfix]

|  |  |  |
| --- | --- | --- |
| customer\_ID | bigint | PK |
| customer\_business\_ID | bigint | FK, linked to customer\_business table |
| customer\_account\_type | tinyint | FK, linked to customer\_account\_type table. |
| customer\_account\_status | tinyint | FK, linked to customer\_account\_status table. (Status: New, Active, Suspended, Closed) |
| assigned\_staff\_user | int | FK, linked to staff\_user table |
| first\_name | varchar(100) |  |
| last\_name | varchar(100) |  |
| email\_address | varchar(254) |  |
| mobile\_phone | varchar(50) |  |
| mailing\_address\_street | varchar(100) |  |
| mailing\_address\_room\_number | varchar(100) |  |
| mailing\_address\_city | varchar(100) |  |
| mailing\_address\_state\_province | varchar(100) |  |
| mailing\_addresss\_country | tinyint | FK, linked to country table |
| billing\_address\_street | varchar(100) |  |
| billing\_address\_room\_number | varchar(100) |  |
| billing\_address\_city | varchar(100) |  |
| billing\_address\_state\_province | varchar(100) |  |
| billing\_addresss\_country | tinyint | FK, linked to country table |
| customer\_note | varchar(1000) |  |
| email\_group | smallint | FK, linked to customer\_email\_group table |
| notification\_preference | tinyint | FK, linked to customer\_notification\_prefernce table. (Preference: email, SMS, phone) |
| enable\_client\_portal | tinyint | Value: 0: no, 1: yes |
| client\_portal\_username | varchar(100) |  |
| hashed\_password | varchar(100) |  |
| security\_question | varchar(100) |  |
| security\_question\_answer | varchar(100) |  |
| enable\_2\_factor\_authentication\_login | tinyint | Value: 0: no, 1: yes |
| send\_passcode\_to\_device\_ID | tinyint | FK, linked to passcode\_receive\_device table |

Table: customer\_account\_type\_[postfix]

|  |  |  |
| --- | --- | --- |
| customer\_account\_type\_ID | tinyint | value: 1,2,3,4, |
| account\_type\_name | varchar(100) | Value: personal, business, nonprofit, government, |

Table: customer\_account\_status\_[postfix]

|  |  |  |
| --- | --- | --- |
| customer\_account\_status\_ID | tinyint | value: 1,2,3,4,5 |
| account\_status\_name | varchar(100) | value: new, active, suspended, disabled, closed |

Table: customer\_notification\_preference\_[postfix]

|  |  |  |
| --- | --- | --- |
| notification\_preference\_ID | tinyint | Value: 1,2,3, |
| notification\_preference\_name | varchar(100) | Value: email, SMS, phone voice |

Table: customer\_email\_group\_[postfix]

|  |  |  |
| --- | --- | --- |
| email\_group\_ID | smallint | Value: 1,2,3,4,5,6,... |
| email\_group\_name | varchar(100) | Value: custom values (master user can set the custom value) |
| email\_group\_description | varchar(500) | Value: custom values (master user can set the custom value) |

Table: customer\_business\_[postfix]

|  |  |  |
| --- | --- | --- |
| customer\_business\_ID | bigint | PK |
| customer\_ID | bigint | PK |
| business\_name | varchar(200) |  |
| business\_type | tinyint | FK, Linked to business\_type table |
| business\_time\_zone | tinyint | FK, Linked to time\_zone table |
| business\_phone\_number | varchar(50) |  |
| business\_fax\_number | varchar(50) |  |
| business\_address\_street | varchar(100) |  |
| business\_address\_room\_number | varchar(100) |  |
| business\_address\_city | varchar(100) |  |
| business\_address\_state\_province | varchar(100) |  |
| business\_addresss\_country | tinyint | FK, linked to country table |
| business\_description | varchar(1000) |  |
| business\_logo | binary |  |

Table: customer\_work\_[postfix]

|  |  |  |
| --- | --- | --- |
| customer\_work\_ID | bigint | PK |
| customer\_ID | bigint | FK, linked to customer\_account table |
| work\_status | tinyint | FK, linked to customer\_work\_status table. |
| assigned\_staff\_user | int | FK, linked to staff\_user table |
| schedule\_start\_date | date |  |
| schedule\_end\_date | date |  |
| schedule\_start\_time | time |  |
| schedule\_end\_time | time |  |
| work\_repeat\_interval | tinyint | FK, linked to work\_repeat\_interval table. |
| work\_time\_duration | tinyint | FK, linked to work\_time\_duration table |
| work\_location\_type | tinyint | FK, linked to work\_location\_type table |
| work\_description | varchar(2000) |  |
| work\_documents\_ID | text | FK, linked to work\_documents table |
| work\_billable | tinyint | Value: 0: no, 1: yes. |
| wrok\_billing\_rate | smallint | FK, linked to customer\_work\_billing\_rate table |
| billing\_currency\_ID | smallint | FK, linked to billing\_currency table |
| work\_reminder\_notify\_staff | tinyint | Value: 0: no, 1: yes |
| work\_reminder\_notify\_staff\_time | tinyint | FK, linked to work\_reminder\_notify\_time table. |
| work\_reminder\_notify\_staff\_method | tinyint | FK, linked to customer\_notification\_preference |
| work\_reminder\_notify\_customer | tinyint | Value: 0: no, 1: yes |
| work\_reminder\_notify\_customer\_time | int | FK, linked to work\_reminder\_notify\_time table. |
| work\_reminder\_notify\_customer\_method | int | FK, linked to customer\_notification\_preference |
| work\_reminder\_message | varchar(1000) |  |
| actual\_complete\_date | date |  |
| actual\_complete\_time | time |  |

Table: customer\_work\_status\_[postfix]

|  |  |  |
| --- | --- | --- |
| work\_status\_ID | tinyint | PK, value: 1,2,3,4, |
| work\_status\_name | varchar(100) | Value: scheduled, in-progress, pending, completed, |

Table: work\_time\_duration\_[postfix]

|  |  |  |
| --- | --- | --- |
| work\_time\_duration\_ID | smallint | PK, value: 1,2,3, 4,5,6,... |
| work\_time\_duration | varchar(100) | Value: 30 minutes, 45 minutes, 1 hour, 2 hours, 4 hours, 6 hours, 8 hours, 12 hours, 1 day, 2 days, 3 days, custom value (master user can set the custom time duration) |
| work\_time\_duration\_minutes | int | Value: 30,45,60,120,240,360,480,720,1440,2880,4320,...... |

Table: work\_location\_type\_[postfix]

|  |  |  |
| --- | --- | --- |
| work\_location\_type | tinyint | PK, value: 1,2,3,4,5,6,.... |
| location\_type | varchar(100) | Value: staff office, customer office, customer site, custom values (master user can set the custom value) |

Table: customer\_work\_billing\_rate\_[postfix]

|  |  |  |
| --- | --- | --- |
| work\_billing\_rate\_ID | smallint | PK, value: 1,2,3,4,5,6,.... |
| work\_time\_duration\_ID | smallint | Value: 1,2,3,4,5,6,...... |
| billing\_rate | double | Value: custom values(master user will set the billing rate by himself) |
| billing\_rate\_comment | varchar(200) |  |

Table: work\_reminder\_notify\_time\_[postfix]

|  |  |  |
| --- | --- | --- |
| work\_reminder\_notify\_time | tinyint | PK, value: 1,2,3,4,5,6,..... |
| reminder\_schedule\_name | varchar(100) | value: 1 hour, 2 hours, 4 hours, 8 hours, 12 hours, 1 day, 2 days, 3 days, 1 week, 2 weeks, 1 month, 2 months, custom values (master user can set the custom value) |
| reminder\_schedule\_minutes | int | Value:60,120,240,480,720,1440,2880,4320,...... |

Table: work\_repeat\_interval\_[postfix]

|  |  |  |
| --- | --- | --- |
| work\_repeat\_interval\_ID | tinyint | PK, value: 1,2,3,4,5,6,..... |
| repeat\_Interval\_name | varchar(100) | value: 4 hours, 8 hours, 12 hours, 1 day, 2 days, 3 days, 1 week, 2 weeks, 1 month, 2 months, custom values (master user can set the custom value) |
| repeat\_Interval\_minutes | int | Value:240,480,720,1440,2880,4320,...... |

Table: customer\_work\_template\_[postfix]

|  |  |  |
| --- | --- | --- |
| customer\_work\_template\_ID | int | PK |
| template\_name | varchar(100) |  |
| template\_section\_ID | smallint |  |
| assigned\_staff\_user | int | FK, linked to staff\_user table |
| schedule\_start\_date | date |  |
| schedule\_end\_date | date |  |
| work\_repeat\_interval | tinyint | FK, linked to work\_repeat\_interval table. |
| schedule\_start\_time | time |  |
| schedule\_end\_time | time |  |
| work\_time\_duration | tinyint | FK, linked to work\_time\_duration table |
| work\_location\_type | tinyint | FK, linked to work\_location\_type table |
| work\_client\_contact | int | FK, linked to customer\_account table |
| work\_description | varchar(2000) |  |
| work\_documents\_ID | text | FK, linked to work\_documents table |
| work\_billable | tinyint | Value: 0: no, 1: yes |
| wrok\_billing\_rate | int | FK, linked to customer\_work\_billing\_rate table |
| work\_reminder\_notify\_staff | tinyint | Value: 0: no, 1: yes |
| work\_reminder\_notify\_staff\_time | tinyint | FK, linked to work\_reminder\_notify\_time table. |
| work\_reminder\_notify\_staff\_method | tinyint | FK, linked to customer\_notification\_preference |
| work\_reminder\_notify\_customer | tinyint | Value: 0: no, 1: yes |
| work\_reminder\_notify\_customer\_time | tinyint | FK, linked to work\_reminder\_notify\_time table. |
| work\_reminder\_notify\_customer\_method | int | FK, linked to customer\_notification\_preference |
| work\_reminder\_message | varchar(2000) |  |

Table: work\_documents\_[postfix]

|  |  |  |
| --- | --- | --- |
| work\_documents\_ID | bigint | PK |
| file\_name | varchar(200) | Example: customer\_application\_2017.pdf |
| file\_storage\_path | varchar(2000) | Example: /AWS/root/S3/users/20028066/customer\_doc/198/work/392/ |
| description | varchar(1000) |  |
| first\_upload\_date\_time | datetime |  |
| upload\_user | bigint |  |
| share\_with\_client | tinyint | Value: 0: no, 1: yes |
| modify\_date\_time | datetime |  |
| delete\_date\_time | datetime |  |

Table: customer\_work\_invoice\_[postfix]

|  |  |  |
| --- | --- | --- |
| customer\_work\_invoice\_ID | bigint | PK, linked to customer\_work\_invoice\_mapping table |
| customer\_ID | bigint | PK |
| customer\_name | varchar(200) |  |
| invoice\_date | date |  |
| invoice\_total\_amount | double |  |
| billing\_address\_street | varchar(100) |  |
| billing\_address\_room\_number | varchar(100) |  |
| billing\_address\_city | varchar(100) |  |
| billing\_address\_state\_province | varchar(100) |  |
| billing\_addresss\_country | tinyint | FK, linked to country table |
| user\_note | varchar(2000) | Raymond’s comment: the note is written by the user and won’t be shown in the invoice sent to the customer. |
| invoice\_status | tinyint | FK, linked to customer\_invoice\_status table |
| received\_payment\_ID | bigint | FK, linked to customer\_payment table |

Table: customer\_work\_invoice\_mapping\_[postfix] (one-to-many mapping: one invoice can be mapped to many works)

|  |  |  |
| --- | --- | --- |
| customer\_work\_invoice\_ID | bigint | PK |
| customer\_work\_ID | bigint | FK |

Table: customer\_invoice\_status\_[postfix]

|  |  |  |
| --- | --- | --- |
| invoice\_status\_ID | tinyint | PK, value: 0,1,2,3,4 |
| invoice\_status\_name | varchar(100) | Value: created, sent first notice, sent second notice, sent third notice, paid, |

Table: customer\_payment

|  |  |  |
| --- | --- | --- |
| payment\_ID | bigint | PK |
| customer\_work\_invoice\_ID | bigint |  |
| payment\_amount | double |  |
| payment\_method | tinyint | FK, linked to customer\_payment\_method |
| payment\_received\_date\_time | datetime |  |
| user\_note | varchar(500) |  |

Table: customer\_payment\_method

|  |  |  |
| --- | --- | --- |
| payment\_method\_ID | tinyint | Value: 1,2,3,4, |
| payment\_method | varchar(50) | Value: credit card, check, ACH, paypal, |

Table: customer\_group\_notfication\_[postfix]

|  |  |  |
| --- | --- | --- |
| customer\_group\_notification\_ID | bigint | PK |
| notification\_name | varchar(100) |  |
| description | varchar(2000) |  |
| recipients | int | FK, linked to email\_group table |
| schedule\_send\_date | date |  |
| schedule\_send\_time | time |  |
| email\_subject\_line | varchar(100) |  |
| email\_content | text |  |
| email\_attachment\_ID | bigint | FK, linked to group\_notification\_email\_attachment table |
| notification\_status | varchar(20) | Value: new, pending, sent, |
| actual\_send\_date\_time | datetime |  |

Table: group\_notification\_email\_attachment\_[postfix]

|  |  |  |
| --- | --- | --- |
| email\_attachment\_ID | bigint | PK, value: 1,2,3,4,5,6,...... |
| document\_name\_ID | bigint | FK, linked to work\_document table |

**-------------------------------------- The end of the list of User tables ------------------------------------**