



Volunteer Management System (VMS)

1. Brief Description of the Project

A Non-Government Organization called "National Volunteer Initiative" (NVI) that promotes volunteerism in Singapore is proposing to set up a Volunteer Management System (VMS)¹ to match potential volunteers with organizations that need volunteers. The objective of this project is for student teams to develop a VMS database for the NVI that can support the key features specified in this document.

2. Key Features of the Project.

The following are the only functions that VMS must support. Do ignore other functions that other similar VMSs may offer. The attributes that the database of VMS must keep track of are specified in this document: your system should not consider any attribute not mentioned in this document unless it is necessary to support the listed required functions in this document. Derived attributes, if any, should be included in the ER diagram; importantly, you need to explain *how* they are derived (e.g., the formula or 2-3 sentences to describe how they can be computed).

The VMS is a public web portal that caters to 4 groups of users:

- i. System Administrators (SA) - these are the "root users" of the whole system with admin privileges to edit and view any data in the VMS. SAs are employees of NVI. There are at least three SA accounts.
- ii. Volunteer Organization Administrators (VOA) - each volunteer organization (VO) that signs up with the VMS will appoint at least one VOA who will act on behalf of the specific VO. There can be up to 3 VOA accounts per VO.

¹ The idea of VMS is based on volunteer.sg, but students are not required to be familiar with volunteer.sg. In fact, it is best not to be familiar with volunteer.sg, because the student teams should focus only on the requirements stated in this document (which may not match the features of the actual website).

- iii. Public Users - anyone who visits the VMS website to view announcements and volunteering activities are public users. Public users do not have a VMS account and are unable to register for volunteer activities.
- iv. Registered Users (RU) - these are public users who have created an account in the VMS and are able to register for certain volunteer activities.

For the avoidance of conflicts of interest, a person cannot belong to more than one of the SA, VOA, or RU groups, e.g., a SA cannot be a RU at the same time. However, every SA, VOA or RU can choose to sign out from his/her account and browse the VMS website as a PU.

2.1. Function 1: Storage of User Information

For every VMS account, the following user information must be kept:

- Unique account name,
- Name of the person,
- Password to access the account,
- Contact number(s) and number type(s). At least one contact number must be stored, but the user may provide more contact numbers to be stored in the VMS. Contact number types include "mobile", "home", "office" or "others". It is possible for a user to provide multiple contact numbers of the same type (e.g., two mobile numbers). One of the provided contact numbers will be labelled as the primary contact number.

The following is mandatory information kept only for SAs:

- Job grade,
- Extra password. This is a second password, required on top of the regular account password. This is to ensure greater safeguards against SA accounts being hacked.

The following is mandatory information kept only for VOAs:

- Volunteer Organization (VO). Each VOA represents exclusively one VO. Each VO is identified by a unique ID. The name of the VO (e.g., "SPCA", "SMU Safety Center", etc) needs to be stored as well. The VO could possibly have parent VO(s), in which case the ID(s) of its parent VO(s) need to be recorded too. For example, "SMU PAW" is a VO with two parent VOs (i.e., "SMU" and the "SG Animal Welfare Charter"). The VO itself could be parent to other VOs.
- Official appointment title held at the VO (e.g., "Secretary", or "Admin Staff").

- Serial number of a personal hardware security token (similar to the defunct OneKey token). The VOA uses this security token as well as his/her password for 2-factor authentication when logging into the VMS. The serial number of each security token is unique.

The following is mandatory information kept only for RUs:

- Highest educational qualification. That could be (i) “none”, (ii) “certificate”, (iii) “diploma”, (iv) “degree” or (v) “postgraduate degree”.
- Affiliation to VOs. A RU may be affiliated with any number of VOs. VMS needs to record who these VOs are and the date when the RU initiated his/her affiliation with each of them. Affiliation is for life, meaning that once the RU affiliates with a VO, the affiliation does not expire and cannot be terminated at any time. VOs typically have many RUs affiliated to them.
- History of past volunteer activities. The history includes zero, one or more entries, where each entry corresponds to an activity that the RU volunteered for, and also indicates the exact number of hours the RU contributed for that activity. The activity’s name (e.g., “Animal Run”) and the date it takes place, combined, are unique for each activity. An activity is usually organized by a single VO, but it is possible to be jointly organized by more than one VOs; either way, the ID(s) of the organizing VO(s) need to be recorded as well.
- The total number of volunteer hours, as well as the total number of volunteer hours per VO. For example, if a particular RU with no prior record volunteers for the “Animal Run” activity which is jointly organized by “SPCA” and the “Cat Welfare Society”, and contributes 2 hours of work towards this activity, when he/she accesses his/her profile on VMS she should see 2 hours with “SPCA”, 2 hours with “Cat Welfare Society” and 2 hours (instead of 4) as the total number of volunteer hours.

The following is optional information kept only for RUs:

- Category. This is where the RU can specify his/her areas of interest. Any number of interest categories may be indicated by a RU. Categories include the following: (i) “environment”, (ii) “children”, (iii) “grassroots”, (iv) “teaching”, (v) “public health”, (vi) “animals”, and (vii) “crime prevention”. The chosen categories may be useful if the RU wants the VMS to recommend suitable volunteering activities that match her interests.

2.2. Function 2: Posting for Volunteering Activities and Announcements

A VOA may log into the VMS and create a new post on behalf of his/her VO. Each post has an announcement field and can either be linked to a volunteer activity or not. For example, a post could

advertise one particular volunteer activity, while another could be announcing a change in the VO's senior management.

Each post has a (i) start date for visibility and (ii) end date for visibility. These attributes define the date range during which this post will be visible via the VMS. While it is not important to know exactly which VOA created the post, it is important to know which VO the post comes from. For each post, we must record the datetime it was created in the VMS; only one post can be created at a time from a specific VO. A post that is not linked to an activity, is simply a message/announcement from a particular VO. On the other hand, a post that is linked to an activity includes the following information about that activity: (i) name of the activity (e.g., "Animal Day") and (ii) date of the activity. Optional information for each activity includes: (i) minimum educational qualification required for volunteering RUs and (ii) interest categories that the activity is related to. Any number of posts could be made for an activity.

Every post can be set to be visible to everyone (public users and RUs), or only to RUs affiliated with a specified list of VOs. For example, the VOA for "SPCA" may create a post about an activity called "Feedback Collection on Graduate Studies in Vet Science", and specify that the post should be visible only to the affiliated RUs of three specific VOs (i.e., "SPCA", "SMU PAW" and the "Cat Welfare Society"). The VMS needs to record the visibility settings for each post.

2.3. Function 3: Signing up for a Volunteer Activity

RUs/Public users can perform a search for activities based on date, interest categories, name, or organizing VOs. For privacy reasons, the VMS does not keep track of the search history of any user.

Only RUs may register their interest to volunteer for activities. **A RU can register interest for any activity that is visible to him/her and he/she meets the activity's minimum education qualification requirement (if any).** If he/she is already affiliated with (at least one of) the VO(s) that organize the activity, he/she can directly register interest for the activity. However, if he/she is not affiliated with any of the organizing VOs, he/she must first choose one of them to get affiliated with. VMS records the new affiliation and registers the date of the affiliation, as described in Function 1. The RU can then register his/her interest for the intended activity. For example, a RU who is affiliated with "SPCA" and the "Cat Welfare Society" and wants to register as volunteer for "Animal Day" – an activity organized by "SMU PAW" – he/she must first initiate a new affiliation with "SMU PAW" on VMS. A RU may register interest for any number of activities. Activities that a RU has registered his/her interest for will appear under the "Registered Activities" tab when he/she accesses his/her profile. The RU can

deregister from an activity by clicking on the "deregister" button next to that activity on his/her profile (in this case, the VMS removes from its records the registration of interest for that activity, as if it never happened).

2.4. Function 4: Selection of RUs and Completion Records After an Activity

Among all RUs that register their interest for an activity, only some will be accepted. The selection process lies with the VOAs of the organizing VO(s) and is beyond the purpose of VMS, however the VMS must record all registrations of interest and whether they were accepted. Also, once a registration of interest is accepted, the respective RU can no longer deregister from it. Usually, the accepted RUs report for duty and serve at the activity. However, sometimes they do not turn up (e.g., for personal, medical, or unspecified reasons). The VOAs of the organizing VO(s) must record in VMS whether each volunteer completed his/her service to the activity successfully and (if he/she did) they also record how many hours exactly he/she contributed to the activity (note that different volunteering RUs for an activity may contribute a different number of hours). Only successfully completed activities will be visible in the RU's profile under the tab "History of Past Activities".

We can now explain a detail about the "total number of volunteer hours per VO" that need to be kept for each RU, mentioned in Function 1. This requirement is only for the VOs that the RU is affiliated with. Meaning that if the RU successfully volunteers for an activity organized by multiple VOs but he/she is affiliated with only some of them, we will take into account the hours contributed towards the affiliated VOs, but we do not have to keep any count of hours for the non-affiliated VOs. Also, the counting of hours towards a VO considers only activities after the affiliation of the RU with the specific VO.

2.5. Function 5: Training Courses for RUs

Besides linking volunteers to activities, VMS advertises training courses which are organized by VOs. One or more VOs collaborate to organize a course. Each course is identified by a unique course ID. Other information stored about the course includes its name, description and organizing VO(s). The same course can be run many times and it is possible for runs of the same course to overlap, or even happen concurrently. Each run has a Run ID that is unique within the same course (but not necessarily across different courses). Besides the Run ID, other information that needs to be stored for each run includes the start date, end date and number of teaching hours. It is possible for different runs of the same course to have a different number of teaching hours.

Through their VOAs, VOs may endorse selected courses. VMS uses the VOs' endorsements so that it can recommend courses to their affiliated RUs. The VOs that endorse a course need not be organizing it. For example, "SPCA" may endorse course ID Comms88 ("Talking to Animals") that is jointly organized by the "Cat Welfare Society" and "SMU PAWS". Also, it is not mandatory for the organizing VOs to endorse the course. When a VO endorses a course, VMS needs to keep track of the course, the VO and the specific (exactly one) VOA of that VO who registered the endorsement, together with the date of the endorsement.

If the VO later decides to un-endorse the course, VMS must similarly record which the VO is, which is the course being un-endorsed, which (exactly one) VOA of the VO makes the un-endorsement (this VOA is not necessarily the same as the one who registered the endorsement previously) and the date of the un-endorsement. Once un-endorsed, the course cannot be re-endorsed by the same VO.

VMS is not concerned with the enrollment of RUs to courses. If an RU is interested to register for a course, she contacts the organizing VO(s) independently of the VMS.

2.6. Function 6: Awards for RUs

It is common for VOs to give out awards to dedicated volunteers. Each award is issued by one VO and is awarded to one or more recipients (RUs). An award could either be a medal or a certificate and will always have a name (e.g., "Long Service Award") and date (the date on which the award is given). The award name need not be unique (i.e., there may be awards from different VOs that happen to have the same name). However, each award can be uniquely identified by the VO issuing it, the award name and the date of the award. For each award, VMS needs to keep track of the issuing VO, the (at least one) recipients, the name and date of the award, and the award type (medal or certificate). The awards of an RU (if any) are visible in his/her profile.

3.1 Project Phases and Deliverables

Your team is tasked to design the VMS database that can capture the stated business rules as closely as possible. Please focus on the functions that are listed in this document only and ignore other functions that actual volunteer management systems may have.

All clarifications must be made using eLearn Project Discussion Forum (menu ribbon -> Discussions). Post your queries in appropriate Topics (Phase 1, and Phase 2A).

It is **mandatory** for all teams to read the discussion forum on project clarifications posted on eLearn. Posts asking questions that have already been answered shall not be answered.

The project work is divided into two phases, according to the database development process.

- Phase 1: ER Modeling (**Week 5, Thursday, 9 Feb 2023, 22:00 hrs**)
- Phase 2A: Database Implementation (**Week 10, Friday, 17 Mar 2023, 22:00 hrs**)

Please refer to individual phase handout documents for the detailed deliverables and requirements.

3.2 Project Submission

For every phase and as a team, you are required to submit a softcopy of your project deliverables via SMU eLearn Assignment Dropbox.

Penalty for late submission is as follows:

No. of Hours	Mark Deduction
<6 hours	10%
>6 – 24 hours	20%
>24 hours	50 %

The page limit of the submission (to be listed in each phase's handout document) is firm. For example, if the limit is 4 pages, only the first 4 pages of the report will be marked.

3.3 Plagiarism

Plagiarism is strictly not tolerated, and plagiarism cases will be referred to the university's disciplinary committee.

3.4 Peer Evaluation and Instructor Adjustment

During week 9, you can (optionally) complete a confidential peer evaluation of your fellow team members. However, if you have any issues within your team, do highlight to your instructors early and do not wait until the peer evaluation.

We will use these peer evaluations to make a maximal plus or minus 5 marks (out of the total of 15 marks) adjustment of individual student marks over your group's grade. Nevertheless, we will not hesitate to make adjustments of more than 5 marks for any non-participating members of the team.

3.5 Appendix: List of Abbreviations Used in this Document

IPC	Institution of Public Character
NVI	National Volunteer Initiative. The client (sponsor) for this VMS
SMU PAW	SMU People for Animal Welfare
RU	Registered User
SA	System Administrator
SPCA	Society for the Prevention of Cruelty to Animals (one of the VOs)
VMS	Volunteer Management System
VO	Volunteer Organization
VOA	Volunteer Organization Administrator
VTC	Volunteer Training Center