

Cardiac Rehab (Provider-Facing) Application SDD - Addendum v1.0

Mobile Application System Design Document (SDD) Addendum

The System Design Document (SDD) is a dual-use document that provides the conceptual design as well as the as-built design. This document will be updated as the product is built, to reflect the as-built product. Per the Project Management Accountability System (PMAS) Guide, the SDD with conceptual design is required prior to the Milestone 1 Review. The as-built for each delivery must be incorporated prior to the Milestone 2 Review.

The Cardiac Rehab Provider-Facing (CRPF) App is the staff-facing counterpart for [FitHeart](#), VA's web/mobile application allowing Veterans in Home Based Cardiac Rehabilitation programs to self-report vital signs, lab results, and physical activity to their VA Cardiac Rehab team providers. CRPF is a web/mobile-based application primarily targeted to the major desktop browsers. However, using principles of Responsive Design, it will render effectively in tablet and phone browsers as well. The application uses HTML5, CSS3, Bootstrap, Backbone[.Marionette], Chart.js, handlebars.js, jQuery, and underscore.js for the web UI. Identity and Access Management (IAM) SSOi provides authentication services. Web content is served by the CRPF node.js application. Weblogic 12c and VistALink provide RESTful web services and backend VistA connectivity. Because it handles PIHI and writes to the VistA EMR, CRPF is considered a high-risk application under the scope and security boundary of the Mobile Application Environment (MAE).

Future versions of CRPF will use the VA Enterprise Messaging Infrastructure (eMI), Enterprise Service Bus (ESB), Secure Messaging web UI, and VistA Service Assembler's (VSA) SOA Federating Services Platform as they become available.

The application consists of a single Staff-facing portal hosted within the Staff enclave of the MAE.

Mobile Application Information

Project Increment / Release Designation: CRPF 1.0

Product Version: 1.0

| | Veteran | Care Giver | Provider | Public |
|--|---------|------------|----------|--------|
| Intended Audience for Mobile Application | | | X | |

Data Classification

Data Boundaries

| Question | Yes | No | If Yes, what information / data | If yes, then identify any consumer or source system(s) for the data |
|--|-----|----|---|---|
| Does the user enter information or data into the mobile application? | X | | Free text annotation / interpretation included in Cardiac Rehabilitation Progress Notes. Selection of attributes & format for custom views of CR Patient Generated Data (PGD). | VistA PGD |
| Does Mobile Application store information or data entered by the User? If yes, where is it stored? | | X | | |

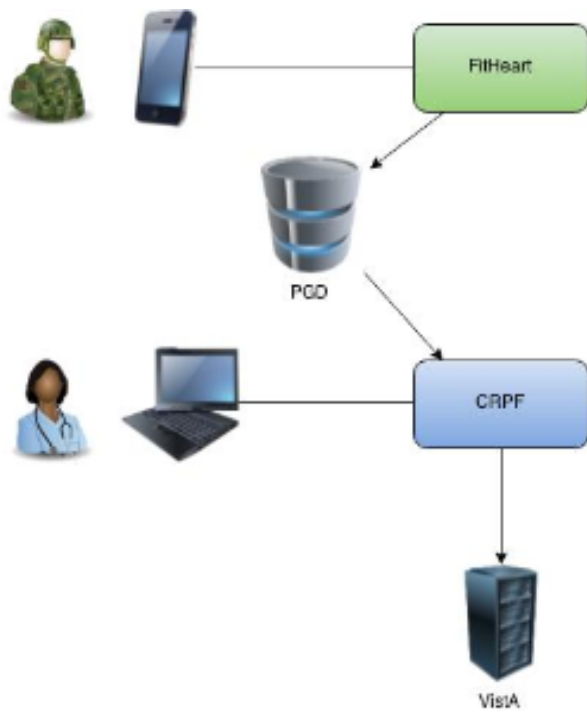
| | | | | |
|--|---|---|---|--|
| Does Mobile Application transmit/push data entered outside of the VAMF to VA? | X | | Data described below are retrieved from VistA & PGD, then summarized and transmitted to VistA as "Cardiac Rehabilitation Progress Notes." Attributes & formats selected for custom views need to be persisted wherever personal preferences are to be kept for Web/Mobile apps. | VistA *VistA, PGD, or other Preferences store (CRPF-249 – need to keep prefs by Provider) |
| Does Mobile Application pull data from a VA Database (external to VAMF)? | X | | Patient & User Identification & demographic data are retrieved from VistA. Physical activity, blood pressure, heart rate, weight, blood sugar, cholesterol, and mood data captured by the CR Patient-facing app and persisted in PGD are retrieved and presented in tabular and graphical views. | VistA PGD |
| Does the Mobile Application store in the VAMF or on the device data pulled from a VA Database? | | X | | |

Data Risk Classification

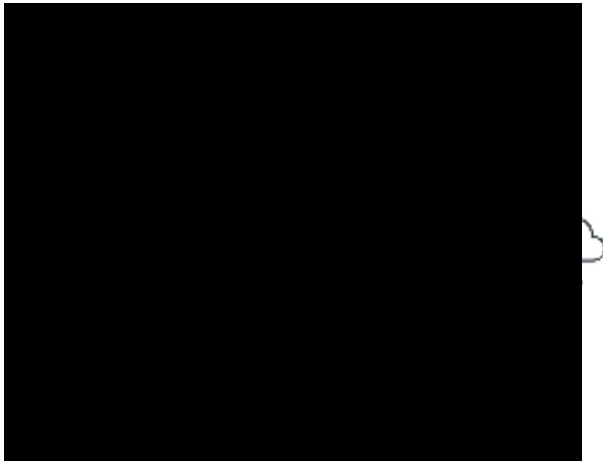
| Mobile Application Classification (Only one box may be checked) | Mark with X |
|---|-------------|
| 1 – Very Low: Mobile Application does not use VA Resource | |
| 2 – Low: Read only access to VA Resource(s) (No PII / PHI) | |
| 3 – Medium: Write access to VA Resource(s) | |
| 4 – High: Read and/or Write access of sensitive data to VA Resource(s) (Includes PII/PHI/other sensitive) | X |

Application Design

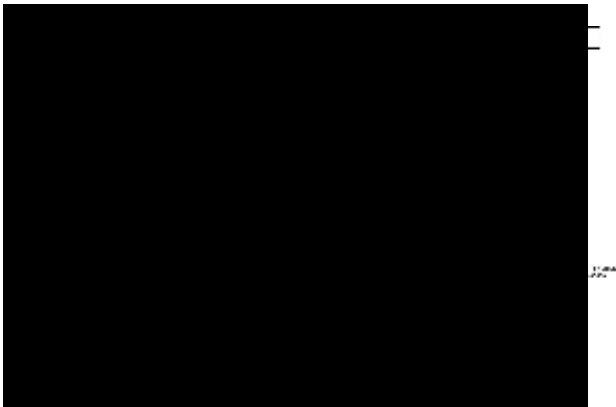
Conceptual Model



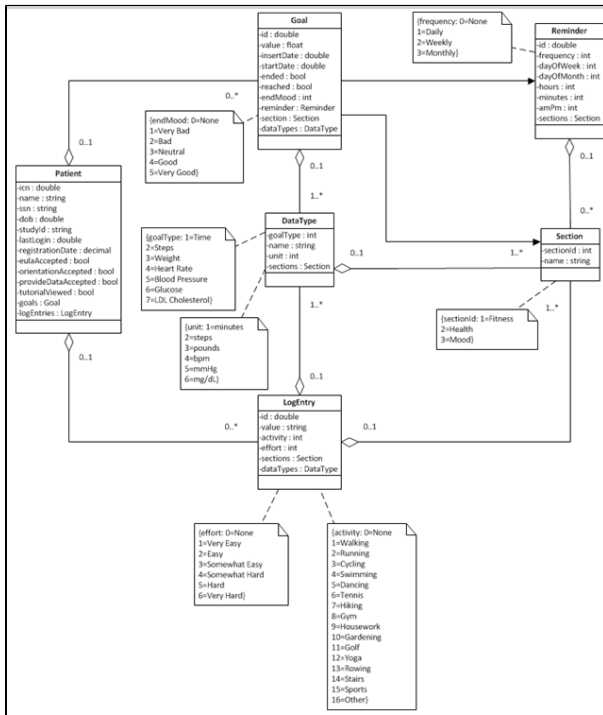
Network Architectural Model (v1)



IAM SSOi / VistA Authentication



Static Structure Business Object Model



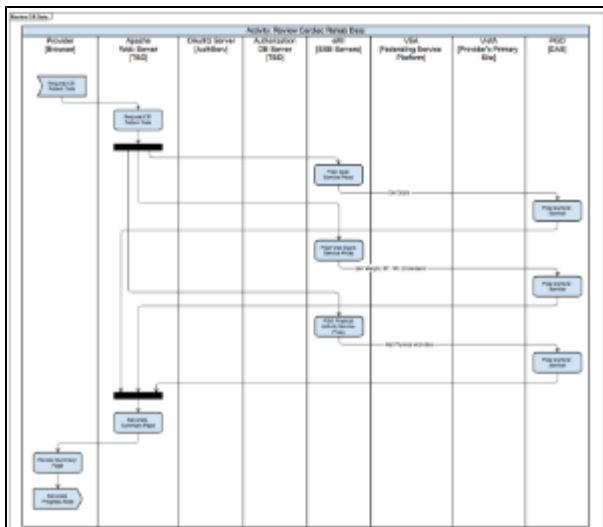
Business Process Models

Current versions of the Business Process Models for CRPF may be found on the Project wiki at: [F/Business+Process+Models](#).

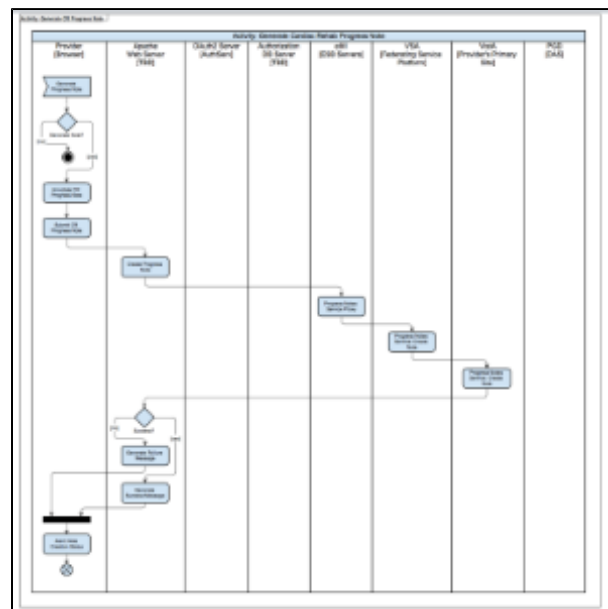
Activity Diagrams

Login





Generate Cardiac Rehab Progress Note



Device / OS Summary

| Device's OS | Native | Hybrid | Web Only | OS Version Supported | Targeted Devices (iPhone, iPad, Samsung...) | Estimated Storage Required for Device |
|---------------------|--------|--------|----------|----------------------|---|---------------------------------------|
| iOS | | | X | 7.1+ | Any | N/A |
| Android | | | X | 4.3+ | Any | N/A |
| Mac OS X (Desktop) | | | X | 10.8+ | Any | N/A |
| Windows 7 (Desktop) | | | X | 7.x | Any | N/A |

| | | | | | | |
|-----------|--|--|---|-----|-----|-----|
| Windows 8 | | | X | 8.x | Any | N/A |
|-----------|--|--|---|-----|-----|-----|

Libraries

| Technology, Libraries, Tools Used in the App | Version | On the TRM? (If not, provide a link to the waiver) |
|--|---------|--|
| HTML5 | 5 | Yes |
| CSS3 | 3 | Yes |
| Bootstrap | 3.3.2 | ??? |
| Backbone | 1.1.2 | ??? |
| Backbone.Marionette | 2.2.0 | ??? |
| Chart.JS | 1.0.1 | Yes |
| handlebars.js | 2.0.0 | ??? |
| jQuery | 2.1.1 | ??? |
| jQuery-UI | 1.11.2 | ??? |
| typeahead.jQuery (need to include?) | 2.66 | ??? |
| underscore.js | 1.7.0 | ??? |
| WebLogic 12c | 12.1.1 | Yes |
| Java | 1.7 | ??? |
| JavaEE | 6.0 | ??? |
| Jackson | 2.3.3 | ??? |
| JAXB | 2.2.6 | ??? |
| JAX-RS | 1.1 | ??? |
| JSTL | 1.2.1 | ??? |
| JUnit | 4 | ??? |
| Jersey | 1.18.1 | ??? |
| Spring | 3.1.1 | ??? |

Data Architecture

Because CRPF summarizes data from the Health Factor (Fitness Goals & Fitness Activities) & Medical History (Vitals, Labs & Mood) Patient-Generated Databases captured by FitHeart, and produces a Progress Note to be filed in the TIU Document File (#8925) in Vista, the data Architecture is described elsewhere:

- [FitHeart App 1.0 SDD](#)
- [Health Tracker Services 1.1 SDD](#)
- [Health Factor Services 1.0 SDD](#)
- [CPRS-TIU 1.0 Technical Manual](#)

Laws / regulations

None.

Expected User Base

| User Category | Total Number of Users | Concurrent Users |
|---------------|--|---|
| Clinicians | Expected Maximum user base: ~5,000. (i.e., 50 total users per site) | Expected Concurrent user base: ~500. (i.e., 5 concurrent users per site) |

Interface Design

Existing VAMF Interfaces Used

| Interface Name (incl. version number) | Data Used by Mobile App | Source of Data | Data Retrieved - provide specific data elements used by this app |
|---------------------------------------|-------------------------|----------------|--|
| N/A | | | |

New/Updated VAMF Interfaces Added

Patient List Services

List All Patients

Proposed ICD

| | |
|--------------------|---|
| GET | /vpls/v1/patientList/{site-id}/{duz}/listAll/{search-string}/{direction}] |
| Path Parameters | site-id: The identifier of the VistA Site in the VA Institution File. duz: The identifier of the User on the VistA instance identified by site-id. search-string (optional): alpha-numeric string by which the list will be filtered. Allowable values include a name or partial name, SSN, or Last Initial/Last 4, as familiar to users of CPRS. If no search-string is specified then the list will begin alphabetically from the first patient known to the system. direction (optional): integer indicating the direction in which to proceed from the search string (i.e., 1 : forward (default), -1 : reverse) |
| Description | Returns the patients known to the VistA instance to which the user authenticated in alphabetical order from the search string, in the specified direction. |

| | |
|-----------------|--|
| Response | <p>Patients (JSON):</p> <pre>{ "id": "-1", "name": "All Patients", "listType": "All", "patients": [{ "dfn": "{dfn}", "ssn": "{ssn}", "dateOfBirth": "1950-01-01", "gender": "M", "veteran": true, "scPercent": "", "wardLocation": "MEDICAL INTENSIVE CARE UNIT", "roomBed": "ICU-30", "name": "DOE,JOHN ONE", "age": "65", "icn": "{icn}" }, ...] }</pre> |
| Other Responses | <p>204: No Content - no data found. No responses exist for the request</p> <p>400: Bad Request - A validation exception occurred</p> <p>403: Access Denied - Request made by unauthorized user</p> <p>503: Service Unavailable - the service was unable to process the request</p> |

Retrieve Patient Lists for User

Proposed ICD

| | |
|-----------------|---|
| GET | /vp1/v1/patientList/{site-id}/{duz}/myLists |
| Path Parameters | <p>site-id: The identifier of the VistA Site in the VA Institution File.</p> <p>duz: The identifier of the User on the VistA instance identified by site-id.</p> |
| Description | Returns the CPRS Personal Patient Lists for a specified user. |
| Response | <p>Patient Lists (JSON):</p> <pre>[{ "id": "-1", "name": "All Patients", "listType": "All", "patients": [] }, { "id": "317", "name": "Cardiac Rehab Active", "listType": "Personal", "patients": [] }, { "id": "318", "name": "Cardiac Rehab Inactive", "listType": "Personal", "patients": [] }]</pre> |

| | |
|-----------------|--|
| Other Responses | <p>204: No Content - no data found. No responses exist for the patient</p> <p>400: Bad Request - A validation exception occurred</p> <p>403: Access Denied - Request made by unauthorized user</p> <p>503: Service Unavailable - the service was unable to process the request</p> |
|-----------------|--|

Create Patient List

Proposed ICD

| | |
|-----------------|--|
| POST | <code>/vpls/v1/patientList/{site-id}/{duz}/list/{list-name}/{visibility}</code> |
| Path Parameters | <p>site-id: The identifier of the VistA Site in the VA Institution File.</p> <p>duz: The identifier of the User on the VistA instance identified by site-id.</p> <p>list-name: alpha-numeric name of the list.</p> <p>visibility: integer indicating whether the list may be viewed and used only by the owner (visibility = 0) or by all CPRS users (visibility = 1).</p> |
| Description | Creates a new Personal Patient List |
| Response | <p>Result (JSON):</p> <pre>{ "ien": "{ien}", "name": "Cardiac Rehab Active", "visibility": "{visibility}" }</pre> |
| Other Responses | <p>400: Bad Request - A validation exception occurred</p> <p>403: Access Denied - Request made by unauthorized user</p> <p>503: Service Unavailable - the service was unable to process the request</p> |

Retrieve Patient List

Proposed ICD

| | |
|-----------------|--|
| GET | <code>/vpls/v1/patientList/{site-id}/{duz}/list/{list-id}/{search-string}</code> |
| Path Parameters | <p>site-id: The identifier of the VistA Site in the VA Institution File.</p> <p>duz: The identifier of the User on the VistA instance identified by site-id.</p> <p>list-id: The identifier of the list to retrieve</p> <p>search-string (optional): alpha-numeric string by which the list will be filtered. Allowable values include a name or partial name, SSN, or Last Initial/Last 4, as familiar to users of CPRS. If no search-string is specified then the list will begin alphabetically from the first patient known to the system.</p> |
| Description | Retrieves a specified Patient List. |

| | |
|-----------------|---|
| Response | <p>Patient List (JSON):</p> <pre>{ "id": "317", "name": "Cardiac Rehab Active", "listType": "Personal", "patients": [{ "dfn": "{dfn}", "ssn": "{ssn}", "dateOfBirth": "1933-10-01", "gender": "M", "veteran": true, "scPercent": "", "wardLocation": "", "roomBed": "", "name": "DOE,JOHN TWO", "age": "81", "icn": "{icn}" }, ...] }</pre> |
| Other Responses | <p>204: No Content - no data found. No responses exist for the requested list</p> <p>400: Bad Request - A validation exception occurred</p> <p>403: Access Denied - Request made by unauthorized user</p> <p>503: Service Unavailable - the service was unable to process the request</p> |

Update Patient List

Proposed ICD

| | |
|-----------------|---|
| PUT | <pre>/vpls/v1/patientList/{site-id}/{duz}/list/{list-id} /{list-name}/{visibility}</pre> |
| Path Parameters | <p>site-id: The identifier of the VistA Site in the VA Institution File.</p> <p>duz: The identifier of the User on the VistA instance identified by site-id.</p> <p>list-id: The identifier of the list to be modified.</p> <p>list-name: alpha-numeric name of the list.</p> <p>visibility: integer indicating whether the list may be viewed and used only by the owner (visibility = 0) or by all CPRS users (visibility = 1).</p> |
| Description | Update a given Personal Patient List |
| Request Body | <p>List Members (JSON):</p> <pre>[{ "dfn": "{dfn1}", "name": "{name1}" }, { "dfn": "{dfn2}", "name": "{name2}" }, ...]</pre> |

| | |
|-----------------|--|
| Response | Success (JSON): <pre>{ "success": {Boolean}, "errorMessage": "{explanatory text}", "value": "{ien 0}" }</pre> |
| Other Responses | 400: Bad Request - A validation exception occurred 403: Access Denied - Request made by unauthorized user 503: Service Unavailable - the service was unable to process the request |

Delete Patient List

Proposed ICD

| | |
|-----------------|---|
| DELETE | /vppls/v1/patientList/{site-id}/{duz}/list/{list-id} |
| Path Parameters | site-id: The identifier of the VistA Site in the VA Institution File. duz: The identifier of the User on the VistA instance identified by site-id. list-id: The identifier of the list to be deleted. |
| Description | Deletes a Personal Patient List. |
| Response | 200: Success |
| Other Responses | 400: Bad Request - A validation exception occurred 403: Access Denied - Request made by unauthorized user 503: Service Unavailable - the service was unable to process the request |

Document Management Services

List All Note Titles

Proposed ICD

| | |
|-----------------|---|
| GET | /vdms/v1/definitions/{site-id}/{duz}/notes/all-titles/{search-string}/{direction} |
| Path Parameters | site-id: The identifier of the VistA Site in the VA Institution File. duz: The identifier of the User on the VistA instance identified by site-id. search-string (optional): alpha-numeric string by which the list will be filtered. Allowable values include a name or partial name, SSN, or Last Initial/Last 4, as familiar to users of CPRS. If no search-string is specified then the list will begin alphabetically from the first patient known to the system. direction (optional): integer indicating the direction in which to proceed from the search string (i.e., 1 : forward (default), -1 : reverse) |
| Description | Returns the Note Titles known to the VistA instance to which the user authenticated in alphabetical order from the search string, in the specified direction. |

| | |
|-----------------|--|
| Response | <p>Titles (JSON):</p> <pre>[{ "ien": "{ien}", "title": "ACROMEGALY <C&P ACROMEGALY>" }, { "ien": "{ien}", "title": "ADDICTION <ASI-ADDICTION SEVERITY INDEX>" }, ...]</pre> |
| Other Responses | <p>204: No Content - no data found. No responses exist for the request</p> <p>400: Bad Request - A validation exception occurred</p> <p>403: Access Denied - Request made by unauthorized user</p> <p>503: Service Unavailable - the service was unable to process the request</p> |

Retrieve Preferred Titles for User

Proposed ICD

| | |
|-----------------|---|
| GET | /vdms/v1/definitions/{site-id}/{duz}/notes/personal-titles |
| Path Parameters | <p>site-id: The identifier of the VistA Site in the VA Institution File.</p> <p>duz: The identifier of the User on the VistA instance identified by site-id.</p> |
| Description | Returns the CPRS Default and Preferred Note Titles for a specified user. |
| Response | <p>Titles (JSON):</p> <pre>{ "defaultTitle": { "ien": "{ien}", "title": "Cardiac Rehab Prog Note", }, "preferredTitles": [{ "id": "{ien}", "name": "Cardiac Rehab Prog Note", }, { "id": "{ien}", "name": "Cardiac Rehab E & M Note" }, { "ien": "{ien}", "title": "Cardiac Rehab Disch Note" }, ...] }</pre> |
| Other Responses | <p>204: No Content - no data found. No responses exist for the user</p> <p>400: Bad Request - A validation exception occurred</p> <p>403: Access Denied - Request made by unauthorized user</p> <p>503: Service Unavailable - the service was unable to process the request</p> |

Create Progress Note

Proposed ICD

| | |
|-----------------|--|
| POST | /vdms/v1/document/500/1320/create-document |
| Path Parameters | site-id: The identifier of the VistA Site in the VA Institution File. duz: The identifier of the User on the VistA instance identified by site-id. |
| Description | Create a Progress Note |
| Request Body | Note Contents (JSON): { "title": "{title-ien}", "patientId": "{dfn}", "body": "{document-body}" } |
| Response | Success (JSON): { "success": {Boolean}, "errorMessage": "{explanatory text}", "value": "{ien 0}" } |
| Other Responses | 400: Bad Request - A validation exception occurred 403: Access Denied - Request made by unauthorized user 503: Service Unavailable - the service was unable to process the request |

Dependencies/SLA

For example, you are reliant on a VA system to implement something for you, including supporting testing:

| Project Dependency | Point of Contact Information | Describe Dependency |
|---|------------------------------|---|
| Cardiac Rehab App - Patient Facing (FitHeart) | [REDACTED] | Patient-Generated Weights, Vitals, Physical Activities, and Goals will be captured by CRA and persisted in the PGD. |
| OR*3*408 | [REDACTED] | New RPCs in support of VistA web services for Patient List Retrieval & Management and CPRS Person attributes, and context menu to mediate VistA-level access. |

Traceability

The RTM for the CRPF application may be found at:
[Cardiac Rehab Provider Facing App: Required Artifacts.](#)

Developer & PM Contact Information

| Developer Name/Point of Contact (POC) | VA E-Mail Address | Phone Number |
|---------------------------------------|---------------------|-------------------|
| ██████████ | ██████████ | ██████████ |
| Developer Organization/Company | Contract Start Date | Contract End Date |
| OI&T PD ADC Mobile Development | N/A | N/A |
| Web and Mobile Solutions PM or POC | VA E-Mail Address | Phone Number |
| N/A | N/A | N/A |
| VA Product Development PM or POC | VA E-Mail Address | Phone Number |
| ██████████ | ██████████ | ██████████ |