Initial data formatting

User:
- username: max 20 chars
- name: max 30 chars
- password: max 20 chars

Individual:
- job title: max 30 chars
- date hired: mm/dd/yyyy

Municipality:
- population size: integer

Government agency:
- jurisdiction: max 30 chars. Example: Federal

Company:
- headquarter: max 30 chars. Example: Downtown Atlanta

Resource:
- ID: unsigned integer
- owner: max 20 chars
- resource name: max 30 chars
- model: max 30 chars
- capabilities: multi-value with max 30 chars, each
- home location:
  - longitude: signed numerical decimal degrees, range [-180, 180]
  - latitude: signed numerical decimal degrees, range [-90, 90]
- cost:
  - price: unsigned float
  - period unit: chosen from the set { Hour, Day, Week } which can be changed later
- status:
  - description: chosen from the set {Available, In Use, In Repair}
  - next available date: mm/dd/yyyy

ESF:
- number/description: chosen from a default set which is extensible: { (#1) Transportation, (#2) Communications, (#3) Public Works and Engineering, (#4) Firefighting, (#5) Emergency Management, (#6) Mass Care, Emergency Assistance, Housing, and Human Services, (#7) Logistics Management and Resource Support, (#8) Public Health and Medical Services, (#9) Search and Rescue, (#10) Oil and Hazardous Materials Response, (#11) Agriculture and Natural Resources, (#12) Energy,

(#13) Public Safety and Security, (#14) Long-Term Community Recovery, (#15) External Affairs }

Incident:
- ID: max 10 chars, numeric
- owner: max 20 chars
- date: mm/dd/yyyy
- description: max 100 chars
- location:
  - longitude: signed numerical decimal degrees, range [-180, 180]
  - latitude: signed numerical decimal degrees, range [-90, 90]

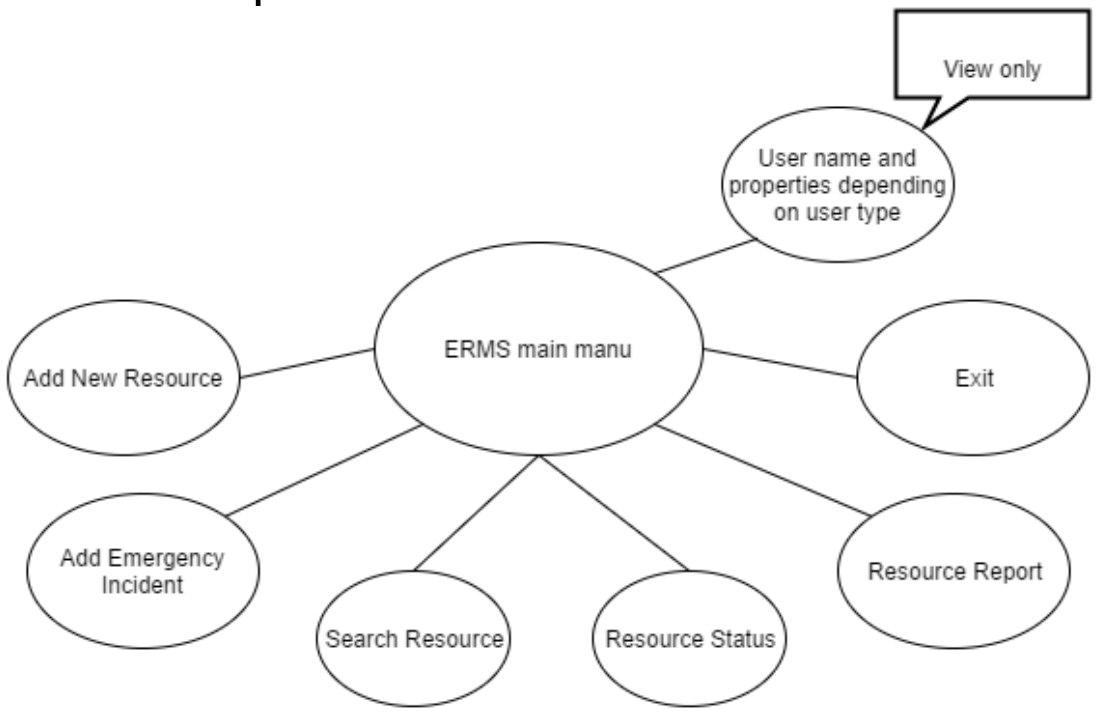
Repair:
- start date: mm/dd/yyyy
- ready by: mm/dd/yyyy

Request:
- start date: mm/dd/yyyy
- return by: mm/dd/yyyy

Constraints

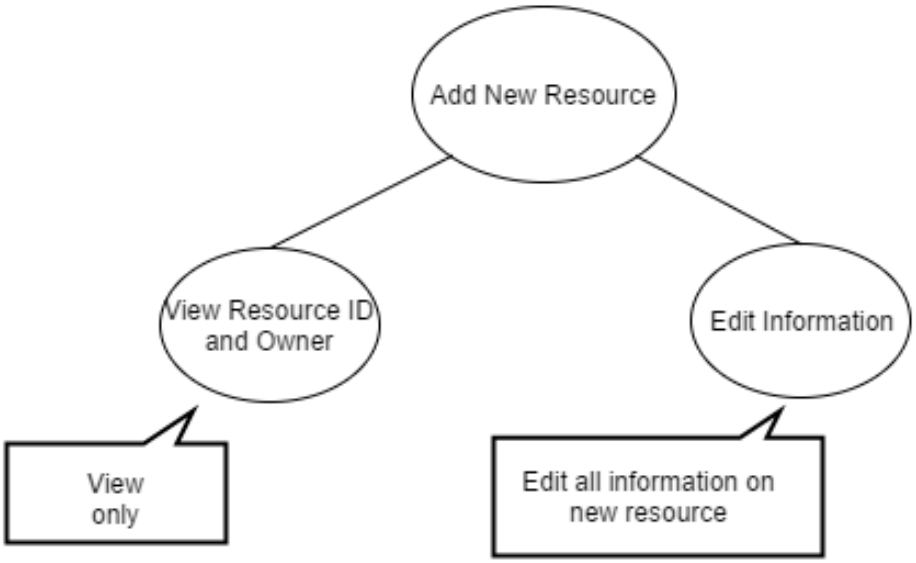
1. For an individual user, the ‘date hired’ cannot be later than today.
2. For a resource, the ‘next available date’ of ‘status’ cannot be today or ahead of today.
3. For an instance, the ‘date’ cannot be later than today.
4. All attributes except ‘model’, ‘capabilities’, and ‘additional ESFs’ cannot be NULL.
5. When a request is made, its ‘start date’ cannot be ahead of the ‘next available date’, and its ‘return by’ date cannot be ahead of the ‘start date’.
6. When a repair is scheduled, its ‘start date’ cannot be ahead of the ‘next available date’, and its ‘ready on’ date cannot be ahead of the ‘start date’.

Task Decomposition and abstract code



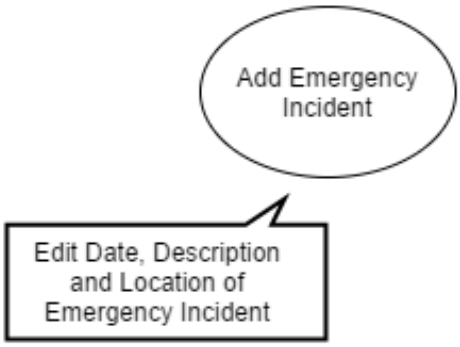
Abstract Code - ERMS main menu

Find the current User using the username;
Display user's name, population size, jurisdiction or headquarters depending on user type;
Display menu options;



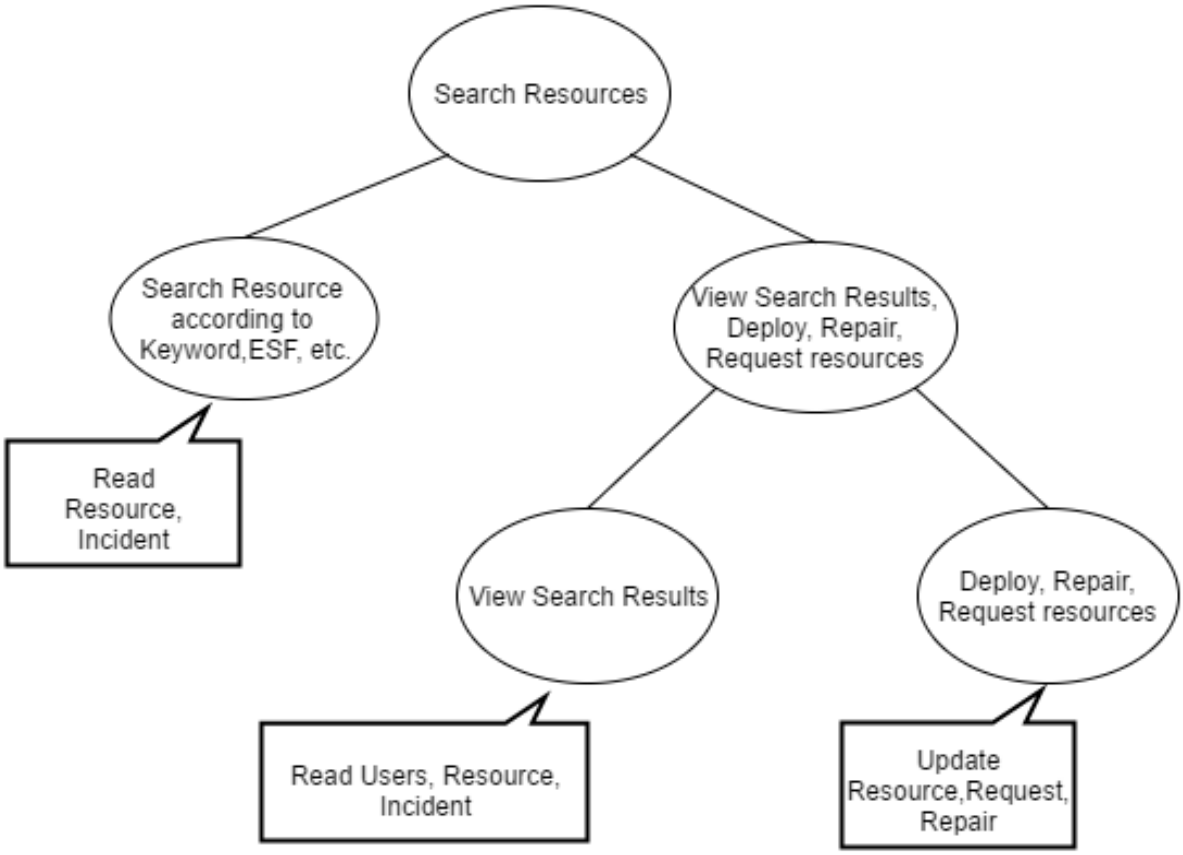
Abstract Code - Add New Resource

View auto assigned Resource ID, Owner Name;
While no buttons are pushed, do nothing;
While a button is pushed, then do the following:
{If Save:
    Validate all fields
    if all fields are valid:
        {Update attributes of Resource (name, ESF, model, capabilities, home Location, cost);
        Go back to the ERMS main menu of user;}
    else:
        {Show invalid fields and ask for new valid inputs;
        Wait for another button push;}
If Cancel:
    {Void the auto assigned ID;
    Go to ERMS main menu of user;}}



Abstract Code - Add Emergency Incident

Display auto assigned Incident ID;
While no buttons are pushed, do nothing;
While a button is pushed, then do the following:
{If Save:
    Validate all fields
    if all field are valid:
        {Update attributes of Incident (Date, Description, Location);
        Go back to the ERMS main menu of user;}
    else:
        {Show invalid fields and ask for new inputs;
        Wait for another button push;}
If Cancel:
    Go back to the ERMS main menu of user;}



Abstract Code - Search Resource

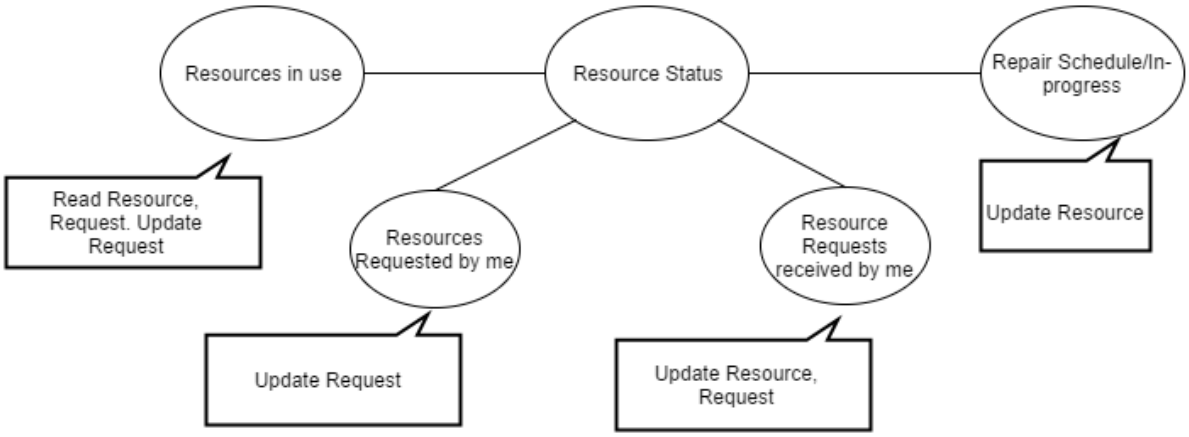
While no buttons are pushed, do nothing;
While a button is pushed, then do the following:
{If Search: Display Search Result table according to search conditions;
If Cancel: Go to ERMS main menu of user;};

Search Result

Find the Incident according to search conditions;
Display the name and ID of incident;
Find the resources according to search conditions;
Display the resources and their attributes, sorted by distance, then availability and then name;

While no buttons are pushed, do nothing;
While a button is pushed, then do the following:
{If Deploy: Update resource; Input expected return time;
else if Repair: Update resource; update repair; Display repair form;
else if Request: Update resource; update request; Display the resource status;

If Close: Go to ERMS main menu of user;}



Abstract Code - Resource Status

Resources in use

Find all resources in use of current user;
Display the resources attributes sorted by resource ID;
While no buttons are pushed, do nothing;
While Return button is pushed, then do the following:
{Update resource;
update request;}

Resources requested by me

Find all resources requested by me;
Display the resources requested by me attributes sorted by resource ID;
While no buttons are pushed, do nothing;
While Cancel is pushed, then do the following:
{Cancel request;}

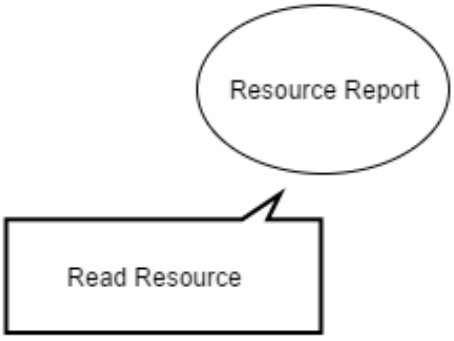
Resources Requests received by me

Find all resources requests received by me;
Display the attributes of resources requests received by me, sorted by return by date;
If the resource is available, do following:

{display Deploy button;}
Display Reject button;
While no buttons are pushed, do nothing;
While a button is pushed, then do the following:
{If Deploy: Update resource; update request;
else if Reject: Cancel request;}

Repairs Schedule/ In-Progress

Find all resources being or has been repaired;
Display the ID, name, and start/ready date of these resources;
While no buttons are pushed, do nothing;
While Cancel is pushed, then do the following:
{Cancel repair;}



Abstract Code - Resource Report

Find all resources of current user;
Calculate the total number of resources and resources in use according to ESF number;
Display the ESF number, ESF description, total source number and number of sources in use;