Repository Process Document
for *Earth*

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Abstract

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Contents

1 Introduction

This document explains the repository structure and how to use it. This includes the necessary git commands and GitHub functions to work on the Earth project effectively. Reading this document in conjunction with the Testing Process Document will explain the testing requirements mentioned at various stages.

The repository has three tiers. The first layer is the main group repository that a fork of the Rising Sun Pictures repository. Each subgroup has a repository that is forked from the main group repository and these form the second layer. The bottom layer are the individual group members' repositories, which are forks of their respective subgroup repositories.

A separate repository stores documents and other files that are not Earth project code.

2 Tool Setup

2.1 Installing Git

This will install git so it can be used.

1. Download git source package from http://git.or.cz/
2. Extract the souce from the archive
3. In a terminal execute the commands:
   - cd <git-source-directory>
   - make
   - make install
   - make test (optional)

2.2 Creating a GitHub Account

This creates a GitHub account to be used.

1. Browse to http://github.com
2. Use the Sign Up link to create an account including SSH keys. There is a link on the sign-up and on the guides page on how to create SSH keys.
3. Add any extra SSH keys for other machines.
4. Inform your group's git leader of your git username.

3 Human Resources Allocation (Git Leaders)

Each group will have a GitHub leader, also known as a git leader. They are responsible for their subgroup's repository and together, manage the main group repository.

The git leaders for each group are below:

- Group1: Alex Egan
- Group2: Mohammad Bamogaddam
- Group3: Ken S'ng Wong

4 Creation and Setup of Repositories

4.1 Creating a Forked Repository

A forked repository is a branch of a given repository. In terms of git and GitHub, it means that the forked repository is a descendant of the original and the two can be merged easily.

1. Log into your GitHub account at http://github.com.
2. Browse to the repository you wish to fork.
3. Click the fork button on the repository's GitHub page.
4. Add the other git leaders as collaborators to this repository. See Section 4.2 for details.

4.2 Adding Collaborators

This task must be performed by the owner of the repository. It will allow a user to add changes into the repository.

1. Log into your GitHub account at http://github.com.
2. Browse to the repository you wish to add collaborators to.
3. Click on the Admin tab at the top of the repository's GitHub page.
4. Click on the Collaborators sub-tab below the Admin tab.
5. Click the Add another collaborator link.
6. Enter the GitHub username of the person you wish to add as a collaborator.
7. Click on the Add button.

5 Working with Git and GitHub

5.1 Getting Code

The following steps detail how to obtain a copy of the repository so that it can be worked on.

1. Locate the address of the repository. Git protocol addresses can be found on the repository's GitHub page. The URL of that page is the HTTP address. Either of these can be used.
2. In a terminal, execute:
   - git-clone <repository-address> <directory-to-store-repository-in>

5.2 Updating a Working Copy

The following will bring your working copy up to date with the latest changes in the repository.

1. In a terminal, execute either one of the following, depending on your needs:
   - git-fetch (to just fetch the changes that are in the repository)
   - git-pull (to both fetch the changes that are in the repository and merge them with your changes)

5.3 Adding New Files to the be Tracked by Git

The following commands will add new files and or directories to be tracked by Git for the next commit. They will need to be committed at some point to a repository as detailed in Section 5.4.

1. In a terminal, execute:
   - git-add <files-or-directories-space-separated>

5.4 Committing Changes

The following details how to commit changes made in a working copy up the repository structure.

1. Edit or add new files to the working copy.
2. In a terminal, execute:

- git-commit (to commit the added changes to the working copy's repository)

  or
  git-commit -a (to commit all changed files)
- git-push (to send the commits back to the GitHub repository)

6 Merging two Repositories

This section details how to merge two repositories so that changes in one become part of the other.

1. In a terminal, execute the following commands:
   - git-remote add <name-of-repository-to-be-merged> <address-of-repository-to-be-merge>
   - git-checkout -b <name-of-repository-to-be-merged>/master
   - git-pull <name-of-repository-to-be-merged> master
   - git-checkout -b <name-to-call-the-merged-branch>
   - git-checkout master
   - git-merge <name-of-repository-to-be-merged> <name-to-call-the-merged-branch>

6.1 GitHub Pull Request

This section explains how to send a GitHub pull request.

1. Log into your GitHub account at http://github.com.
2. Browse to the repository you wish to issue a pull request for.
3. Click on the Pull Request button.
4. Add a message that details why this request is being made.
5. Select the people who you wish to notify.
6. Click send.

6.2 Tagging Versions

This section explains how to tag a version in the repository.

1. In a terminal, execute the following commands:
   - git-tag <tag-name>

7 Process

7.1 Initalising

These are initial steps to do before working on Earth can proceed.

1. Each group member needs to install git as per Section 2.1
2. Each group member needs a GitHub account as per Section 2.2

7.2 Repository Hierarchy Creation

These instructions explain how the repository hierarchy has been created.

1. A git leader forks the Rising Sun Pictures Earth repository, mlandauer/earth, according to Section 4.1. The collaborators to be added here are Ken and Alex. This has been done by Mohammad. This is the root layer of the repository.
2. Each subgroup git leader forks the root repository (mfb82/earth). Collaborators to be added are the members of each group and the other two git leaders. This has been done by Mohammed (mfb1982/earth), Alex (eegs/earth) and Ken (pamalite/earth). This is the second layer of the repository.

3. Each subgroup member forks their group's repository. Any people they wish to be able to access their code-in-progress can be added as collaborators. This is the third layer of the repository.

7.3 Working on the Documents

These instructions explain how to work on the project documents for any group member.

1. The group member obtains a copy of the documentation as per Section 5.1. The repository address is git@github.com:pamalite/segp2.git.

2. Edit the documents and add files as per Section 5.3.
3. Changes can then be added as per Section 5.4.

7.4 Working on the Code

These instructions explain how to work on the Earth code for any group member.

1. The group member obtains a copy of their repository as per Section 5.1. The repository address should be git@github.com:<GitHub username>/earth.git by default.

   or

   Update the local repository to the current version as per Section 5.2.
2. Edit the code and add files as per Section 5.3.
3. New or modified code should be tested as per the Testing Process.
4. When testing is complete, commit the changes to the member's repository as per Section 5.4.

7.5 Completion of a Task

This explains what needs to be done when a group member finishes a task after working on it as per section 7.4.

1. A GitHub pull request should be made to the subgroup's git leader as per Section6.1. The message of the request should, at least, detail any ticket numbers that the changes relate to and what files are changed or added.

7.6 Submitting Changes to the Subgroup Repository

This explains how to submit changes to the subgroup repository after changes have been made as per Section 7.4.

1. Changes from the subgroup repository should be merged into the member's repository as per Section 6.
2. Testing needs to be performed as per the Testing Process.
3. If the changes successfully pass the test cases, a GitHub pull request can be made as per Section 6.1 to the subgroup's git leader.

7.7 Receiving a Pull Request from a Subgroup Member

This explains what a git leader should do when they receive a pull request from a subgroup member.

1. The git leader merges the subgroup member's changes into the current subgroup repository code using a temporary branch as per Section 6.
2. Testing needs to be performed as per the Testing Process.
3. If the changes successfully pass the test cases and code coverage is sufficient, the code is accepted into the subgroup repository.

4. The git leader sends a pull request to each subgroup member to update their repositories to the new subgroup codebase.
5. The git leader sends a pull request to the root repository git leader, or leaders.

7.8 Receiving a Pull Request from a Subgroup Git Leader

This explains what a git leader should do when they receive a pull request from a subgroup git leader.

1. The git leader merges the subgroup's changes into the current root repository code using a temporary branch as per Section 6.
2. Testing needs to be performed as per the Testing Process.
3. If the changes successfully pass the test cases and code coverage is sufficient, the code is accepted into the root repository.
4. The git leader sends a pull request to each subgroup git leader to update their repositories to the new root codebase.
5. The new codebase in the root repository should be tagged with a version as per Section 6.2.

7.9 Submitting Changes to the Rising Sun Pictures Reposiotry

This explains how to submit changes to the Rising Sun Pictures repository for inclusion into the offical Earth project.

1. A git leader that is in charge of the root repository sends a pull request to Matthew Landauer as per Section 6.1. His GitHub username is mlandauer.

8 Summary of Repositories

Below is a list of the important repositories on GitHub that are in use for the project.

Main repository: mfb82/earth
Group 1 repository: eegs/earth
Group 2 repository: mfb1982/earth
Group 3 repository: pamalite/earth
Project documentation repository: pamalite/segp2
Rising Sun Pictures repository: mlandauer/earth