CIS 285: Software Engineering Tools

University of Michigan – Dearborn

Fall 22 Mid-Term Exam

Time: 1 hr. 45 minutes. Total: 100 pts.

Student Name: Zane Richards

1. Use Git commands and Github.com to realize the following process. The exam .zip file contains a java file quraticsolver.java.
   1. Create a new local repository
   2. Add quraticsolver.java to the repository
   3. Create a new gitHub repository e.g Midterm
   4. Push local to the new GitHub repository
   5. Create a local branch ‘YourName’
   6. Under ‘YourName’ branch, make whatever change in quraticsolver.java (you may just change integer a, b and c’s value)
   7. Compare the difference of the file content and then commit
   8. Push ‘YourName’ branch to GitHub
   9. Approve and merge the pull request on gitHub
   10. Synchronize local Master with gitbub

* List all the commands in the process. Your command must follow the same order as the process. 15 pts

**In Git Bash/ GitHub:**

1. **Git init**
2. **Git add -A**
3. **Created Repository in GitHub**
4. **git remote add origin** [**https://github.com/zmrichar/CIS-285-Midterm.git**](https://github.com/zmrichar/CIS-285-Midterm.git)

**git push -u origin master**

1. **git branch Zane**
2. **git checkout Zane**

**Changed variables A, B, and C in quraticsolver.java**

1. **git add -A**

**git commit -m "Zane changed values of A, B, and C"**

1. **git push -u origin Zane**
2. **Approved merge and pull request on GitHub**
3. **Synchronized local Master with GitHub**

* Copy/Paste your github repository url here (Don’t make any change to the github repository after the exam. It is a cheat if you do so) 10 pts

**https://github.com/zmrichar/CIS-285-Midterm.git**

1. Continuing in question 1, Use Atom, GitHub, and Jenkins to realize the following scenario.
   1. Open Atom and Add Project Folder then navigate to quraticsolver’s folder
   2. Under local master branch, use Atom to modify quraticsolver.java (You may just change three integers’ value)
   3. In Atom, commit to local master, then push to github
   4. Connect to campus VPN and login to

<http://umd-cis285.mooo.com:8090/>

user name: cis285

password: cis285

* 1. Create a new freestyle project with the name “YourName\_quraticsolver”
  2. Config the project to connect your Midterm github repository
  3. Schedule Build Triggers to poll SCM every minute.
  4. Use the following command in Build/Execute Windows batch command

javac quraticsolver.java

java quraticsolver

* Provide screenshot of step b 3 pts
* Provide screenshot of step c 3 pts
* Provide screenshot of step f 3 pts
* Provide screenshot of step g 3 pts
* Provide screenshot of step h 3 pts
* Repeat step b and c, then have 2 successful builds in Jenkins. Provide these two Console Output screenshots (Don’t make any change to your Jenkins project after the exam. It is a cheat to do so) 10 pts

1. A marketing plan software takes salesperson’s target group in terms of income, house value, and zip code, the software search internal patron database and returns all name and address that satisfy requirement. The user can export and print the result list and statistical report of the list.
   1. Determine the number of external inputs, external outputs, external inquires, internal logical files and external interface files. 10 pts

**EI: 3 (Income, house value, zip code)**

**EO: 2 (Export and print target name list)**

**(Target report)**

**ILF: 1 (Patron Database)**

* 1. Calculate the number of unadjusted function points for the given software project.(suppose all matrix in (a) are average) 10 pts

**3\*4 + 2\*5 + 1\*10 = 32 Unadjusted function points**



Difficulty Values for Function Points

|  |  |  |  |
| --- | --- | --- | --- |
| Information Domain | Simple | Average | Complex |
| External Inputs | 3 | 4 | 6 |
| External Outputs | 4 | 5 | 7 |
| External Inquires | 3 | 4 | 6 |
| Internal Logical Files | 7 | 10 | 15 |
| External Interface Files | 5 | 7 | 10 |

1. Suppose S(Fi) = 50 in question 3. Average productivity for systems of this type is 6.8 FP/pm and burdened labor rate is $8,000 per month.
   1. Calculate function point 5pts

**FP = 32 \* [0.65 + 0.01 \* 50] = 36.8**

* 1. Calculate total project cost in dollar value 5pts

**Cost per FP = $8000/ 6.8 = $1176.47**

**Estimated project cost = $1176.47 \* 36.8 = $43,294**

* 1. Calculate total estimated effort in pm 5pts

**Total Estimated effort = 36.8/6.8 = 5.4 person-months**

1. Assume you are a software project manager and that you’ve been asked to computer earned value statistics for a small software project. At the time that you’ve been asked to do the earned value analysis, 16 tasks have been completed. However, the project schedule indicates that 18 tasks should have been completed. The following scheduling data (in person-days) are available: Compute the schedule variance, cost variance SPI, CPI, and CSI.

15 pts

|  |  |  |
| --- | --- | --- |
| Task | Planned Effort | Actual Effort |
| 1 | 12 | 12 |
| 2 | 10 | 11 |
| 3 | 15 | 18 |
| 4 | 7 | 9 |
| 5 | 8 | 9 |
| 6 | 18 | 20 |
| 7 | 8 | 11 |
| 8 | 4 | 5 |
| 9 | 11 | 10 |
| 10 | 5 | 3 |
| 11 | 7 | 6 |
| 12 | 14 | 14 |
| 13 | 15 | 15 |
| 14 | 9 | 12 |
| 15 | 8 | 6 |
| 16 | 7 | 8 |
| 17 | 13 |  |
| 18 | 4 |  |