Linux Kernel Hacking 101

Kelley Nielsen

Salticidoftheearth.com

For the Linux Foundation

Oct 8, 2014

ANITA BORG INSTITUTE

GRACE HOPPER CELEBRATION

OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

FREE & OPEN SOURCE SOFTWARE
Outreach Program for Women Internships
organized by the GNOME Foundation

LOOKING FOR AN INTERNSHIP
DEC 2014 - MAR 2015?

MAKE A DIFFERENCE!
Support software freedom!

DEC 9 - MAR 9
PROGRAM DATES

OCT 22
APPLICATION
DEADLINE

$5500
STIPEND (USD)

GNOME.ORG/OPW
LEARN MORE
& APPLY!

FREE & OPEN SOURCE ORGANIZATIONS THAT PARTICIPATED IN THE PAST INCLUDE:

GNOME™   fedora   ownCloud   WIKIMEDIA   Linux   openstack CLOUD SOFTWARE   mozilla

Use your skills in programming, design, documentation,
or marketing, working with an experienced mentor.

....

Work remotely from home while collaborating within
a world-wide free & open source software community!

Open to all interested women (cis and trans) and genderqueer available for a full-time internship.

The process of kernel hacking is a

CYCLE

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

The Creative Cycle

- Code your changes

- Send in your patch

- Gather feedback

- Repeat

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

The Creative Cycle

- Find a contribution to make

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

The Creative Cycle

- Find a contribution to make

  - Read stored communications

  -

  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

The Creative Cycle

- Find a contribution to make

  - Read stored communications

  - Gain experience

  -

The Creative Cycle

- Find a contribution to make

  - Read stored communications

  - Gain experience

  - Ask

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

The Creative Cycle

- Code your contribution

- Prepare and send the patchset

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

The Creative Cycle

- Gather feedback

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

The Creative Cycle

- Gather feedback

  - Testing results

  -

  -

  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

The Creative Cycle

- Gather feedback

  - Testing results

  - Mentoring and guidance

  –

  –

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

The Creative Cycle

- Gather feedback

  - Testing results

  - Mentoring and guidance

  - Discussion of strategies

  -

ANITA BORG INSTITUTE
GRACE HOPPER | 2014 |
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

The Creative Cycle

- Gather feedback

  - Testing results

  - Mentoring and guidance

  - Discussion of strategies

  - General suggestions

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
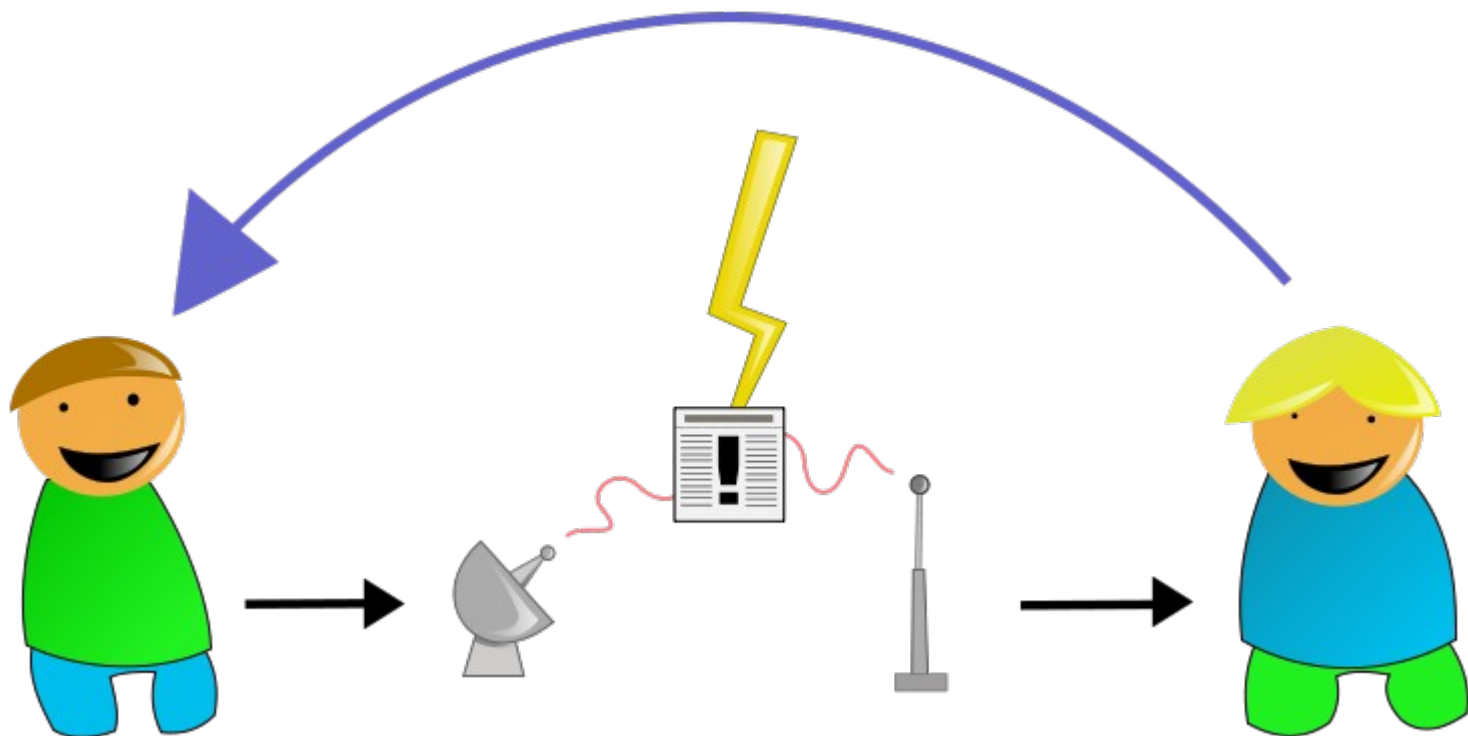Association for
Computing Machinery

The Creative Cycle

- Incorporate changes

  - Use feedback to improve

  - If your contribution is rejected, find another

- Regenerate and resend your patchset

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Repeat the previous two slides until
Your patchset is accepted…
Then repeat with a new patchset…

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating with team members and community

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating

- Mailing lists

-

-

-

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating

- Mailing lists

- Private email

ANITA BORG INSTITUTE
GRACE HOPPER | 2014 |
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating

- Mailing lists

- Private email

- Conferences

-

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating

- Mailing lists

- Private email

- Conferences

- Linux Weekly News

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Communicating

- Internet Relay Chat (IRC)

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating

- Internet Relay Chat (IRC)
  - Looks like multi-way text messaging

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating

- Internet Relay Chat (IRC)
  - Looks like multi-way text messaging

  - Use a dedicated client (not a web client)

  -

  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating

- Internet Relay Chat (IRC)
  - Looks like multi-way text messaging

  - Use a dedicated client (not a web client)

  - Connect to a network

  -

ANITA BORG INSTITUTE

GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Communicating

- Internet Relay Chat (IRC)
  - Looks like multi-way text messaging

  - Use a dedicated client (not a web client)

  - Connect to a network

  - Once on the network, join a channel

ANITA BORG INSTITUTE

GRACE HOPPER | 2014
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

*** **Triddle** n=tyler@c-24-20-181-30.hsd1.wa.comcast.net has joined #xaric
*** 2 users on #xaric at 04:31PM
[Triddle] [@laeos]
*** Channel #xaric was created at Sun Dec 17 16:30:48 2006
*** Xaric: Join to #xaric was synced in 0.043 secs!!
*** mode #xaric +o Triddle by laeos
*** SignOff laeos: #xaric (Client Quit)
*** laeos n=rfeany@cpe-76-172-221-31.socal.res.rr.com has joined #xaric
*** mode #xaric +o laeos by Triddle

[3] @Triddle [Lag 0] via irc.freenode.net #xaric (+ns)
>laeos< why do you waste your time on a 6 year old irc client when no one uses
        IRC anymore?
[laeos] i'm not really sure :)

[2] 04:40PM Triddle (+ei) [Lag 0] via irc.freenode.net [Query: laeos]^^^^^^^^^^
*** Odd server stuff: "ballard.freenode.net 1165644295" ()
*** Xaric: Join to #wikipedia-en was synced in 0.069 secs!!
<Athaena> oh, I see, going by percentages as on
          [[User:Gurch/Reports/ArbComElections]] and/or [[User:Mathbot/ArbCom
          Election December 2006]]
<ShakespeareFan00> Indeed
<ShakespeareFan00> and I don't think it was useless
<Athaena> nope
<Athaena> it's of interest.
<ShakespeareFan00> Of course the 'apointments' still have to be confirmed and
                   accepted
*** tehbrandon n=tehbrand@unaffiliated/tehbrandon has joined #wikipedia-en
[1] Triddle [Lag 0] via irc.freenode.net #wikipedia (+n)
[0]

Coding your changes

Coding your changes

- Plan

- Code

- Compile & run

- Test & debug

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Coding your changes

- Plan
  - Trace existing paths of execution

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Coding your changes

- Plan
  - Trace existing paths of execution

  - Find examples similar to your goal

  -

  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Coding your changes

- Plan
  - Trace existing paths of execution

  - Find examples similar to your goal

  - Learn which lines are relevant

  -

ANITA BORG INSTITUTE
GRACE HOPPER | 2014 |
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Coding your changes

- Plan
  - Trace existing paths of execution

  - Find examples similar to your goal

  - Learn which lines are relevant

  - Your friends are grep and the lxr ident search

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Coding your changes

- Hack your code
  - Language is C

  - Follow kernel coding style

  - Gain skill with your editor

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Coding your changes

- Compile and run
  - This involves installation and rebooting!

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Coding your changes

- Compile and run
  - This involves installation and rebooting!

  - Use a virtual machine or dedicated machine

  -

Coding your changes

- Compile and run
  - This involves installation and rebooting!

  - Use a virtual machine or dedicated machine

  - Maintain a known working and a test kernel

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Coding your changes

- Test and debug
  - Your friend is printk()

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Coding your changes

- Test and debug
  - Your friend is printk()

  - Find messages in /var/log/kern.log

  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Coding your changes

- Test and debug
  - Your friend is printk()

  - Find messages in /var/log/kern.log

  - Create testing scenarios

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Generating and Delivering Your Patch

ANITA BORG INSTITUTE
GRACE HOPPER | 2014 |
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git commit strategy

- Git branching strategy

- Composing the commit message

- The patch

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git commit strategy
  - Make small incremental changes

ANITA BORG INSTITUTE
GRACE HOPPER | 2014 |
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git commit strategy
  - Make small incremental changes
  - Make changes in logical order
  -
  -
  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git commit strategy
  - Make small incremental changes
  - Make changes in logical order
  - Each change should be encapsulated
  -
  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git commit strategy
  - Make small incremental changes
  - Make changes in logical order
  - Each change should be encapsulated
  - Be prepared to alter previous commits
  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git commit strategy
  - Make small incremental changes
  - Make changes in logical order
  - Each change should be encapsulated
  - Be prepared to alter previous commits
  - Be prepared for upstream changes as you update your sources

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git branching strategy
  - Keep master branch unmodified
  -
  -
  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git branching strategy
  - Keep master branch unmodified

  - Create a working branch

  -

  -

ANITA BORG INSTITUTE
GRACE HOPPER | 2014 |
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Git branching strategy
  - Keep master branch unmodified

  - Create a working branch

  - Use a throwaway branch to squash commits

  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Delivering Your Patch

- Git branching strategy
  - Keep master branch unmodified

  - Create a working branch

  - Use a throwaway branch to squash commits

  - If this method doesn't work for you, try another

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Delivering Your Patch

- Composing the commit message
  - Work as hard on this as you do on coding!

ANITA BORG INSTITUTE
GRACE HOPPER | 2014 |
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Composing the commit message
  - Work as hard on this as you do on coding!

  - Read existing examples

  -

  -

ANITA BORG INSTITUTE

GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Composing the commit message
  - Work as hard on this as you do on coding!

  - Read existing examples

  - Be concise, yet thorough

  -

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Composing the commit message
  - Work as hard on this as you do on coding!

  - Read existing examples

  - Be concise, yet thorough

  - Use imperative language

Delivering Your Patch

- The patch itself
  - Run checkpatch.pl on the files you change

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- The patch itself
  - Run checkpatch.pl on the files you change

  - Generate patch with a git command

ANITA BORG INSTITUTE
GRACE HOPPER | 2014
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- The patch itself
  - Run checkpatch.pl on the files you change

  - Generate patch with a git command

  - Cc everyone involved with the code

  -

ANITA BORG INSTITUTE

GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- **The patch itself**
  - Run checkpatch.pl on the files you change

  - Generate patch with a git command

  - Cc everyone involved with the code

  - Send using plain text mail

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Delivering Your Patch

- Why plain text?
  - Email formatting will break your code

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Why plain text?
  - Email formatting will break your code

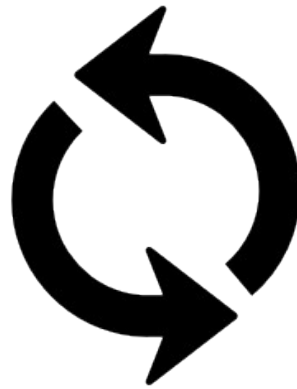 - Team members will apply your patch as is

  -

  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Delivering Your Patch

- Why plain text?
  - Email formatting will break your code

  - Team members will apply your patch as is

  - Commit message will become subject line and content

  -

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Delivering Your Patch

- Why plain text?
  - Email formatting will break your code

  - Team members will apply your patch as is

  - Commit message will become subject line and content

  - Use a specific mail client such as mutt (no gmail!)

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Now wait for your feedback, And do it all again…

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Happy Hacking!

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Got Feedback?

★ Rate and Review the session using the GHC Mobile App

To download visit www.gracehopper.org

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Resources

- Gnome Outreach Program for Women https://wiki.gnome.org/OutreachProgramForWomen
- Kernel.org git repositories https://git.kernel.org/cgit/
- Linux Kernel Newbies http://kernelnewbies.org/
- OPW Intro page http://kernelnewbies.org/OPWIntro
- The Eudyptula Challenge http://eudyptula-challenge.org/
- KVM Installation https://help.ubuntu.com/community/KVM/Installation
- Linux Kernel Mailing List https://lkml.org/
- Various Linux related mailing lists at Gmane http://gmane.org/find.php?list=kernel
- Linux Foundation events http://events.linuxfoundation.org/
- Linux Weekly News http://lwn.net/
- #irchelp http://www.irchelp.org/
- Irssi – The Client of the Future http://www.irssi.org/
- Wikipedia entry for the grep command http://en.wikipedia.org/wiki/Grep
- Linux Cross Reference at Free Electrons http://lxr.free-electrons.com/
- Linux Kernel Coding Style (pdf) https://computing.llnl.gov/linux/slurm/coding_style.pdf
- Vim the editor http://www.vim.org/
- Pro Git http://git-scm.com/book https://www.gitbook.io/book/gitbookio/progit
- The Mutt E-Mail Client http://www.mutt.org/

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING
2014
ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY
Association for
Computing Machinery

Image Credits

- Arrows Circle by Freepik CC BY 3.0
- Communication shannon-weaver2 by Einar Faanes CC BY-SA 3.0
- Xaric screen shot by Triddle BSD License http://commons.wikimedia.org/wiki/File:Xaric_screen_shot.jpg
- Coding All Night Long by Snatcherdudette http://snatcherdudette.deviantart.com/art/Coding-all-night-long-183815498
- Music present by Marta Crowe Creative Commons Attribution 2.0 Generic
- Linux Foundation Logo is in the public domain
- Linux "Tux" Logo is in the public domain

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

ANITA BORG INSTITUTE

GRACE HOPPER | 2014 |
CELEBRATION OF WOMEN IN COMPUTING

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

ANITA BORG INSTITUTE

GRACE HOPPER

CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Title Goes Here

- The first point
  - Sub-points
    - Down one more
      - And again
        - Once more

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery

Title Goes Here

- The first point
  - Sub-points
    - Down one more
      - And again
        - Once more

ANITA BORG INSTITUTE
GRACE HOPPER
CELEBRATION OF WOMEN IN COMPUTING

2014

ANITA BORG INSTITUTE
WOMEN TRANSFORMING TECHNOLOGY

Association for
Computing Machinery