

Characterizing and Predicting Blocking Bugs in Open Source Projects

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Abstract

Software engineering researchers have studied specific types of issues such re-opened bugs, performance bugs, dormant bugs, etc. However, one special type of severe bugs is *blocking bugs*. *Blocking bugs* are software bugs that prevent other bugs from being fixed. These bugs may increase maintenance costs, reduce overall quality and delay the release of the software systems. In this paper, we study *blocking bugs* in eight open source projects and propose a model to predict them early on. We extract 14 different factors (from the bug repositories) that are made available within 24 hours after the initial submission of the bug reports. Then, we build decision trees to predict whether a bug will be a *blocking bugs* or not. Our results show that our prediction models achieve F-measures of 21%-54%, which is a two-fold improvement over the baseline predictors. We also analyze the fixes of these *blocking bugs* to understand their negative impact. We find that fixing *blocking bugs* requires more lines of code to be touched compared to *non-blocking bugs*. In addition, our file-level analysis shows that files affected by *blocking bugs* are more negatively impacted in terms of cohesion, coupling complexity and size than files affected by *non-blocking bugs*.

Keywords: Process Metrics, Code Metrics. Post-release Defects

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Dealing with the Reporter's name factor

Table 1: Comparison between Decision Tree models with and without Reporter's name

Project	Decision Tree model without Reporter's name			Decision Tree model with Reporter's name		
	Precision	Recall	F-measure	Precision	Recall	F-measure
Chromium	15.0%	56.0%	23.7%	15.7%	59.5%	24.8%
Eclipse	12.5%	46.0%	19.7%	14.0%	49.5%	21.9%
FreeDesktop	20.4%	51.6%	29.2%	24.8%	60.3%	35.2%
Mozilla	34.7%	59.9%	44.0%	36.1%	63.4%	46.0%
NetBeans	13.5%	47.1%	21.0%	15.7%	52.9%	24.2%
OpenOffice	13.5%	49.5%	21.2%	14.7%	54.2%	23.1%
Gentoo	12.3%	41.6%	19.0%	13.7%	47.7%	21.2%
Fedora	44.6%	66.2%	53.3%	45.8%	66.7%	54.3%

Bug-fix Collection

Table 2: Downloaded Products by Projects

Project	Product	Repo
Chromium	Chromium	http://git.chromium.org/chromium/chromium.git
Eclipse	platform-eclipse.platform.common	git://git.eclipse.org/gitroot/platform/eclipse.platform.common.git/
	platform-eclipse.platform.debug	git://git.eclipse.org/gitroot/platform/eclipse.platform.debug.git/
	platform-eclipse.platform	git://git.eclipse.org/gitroot/platform/eclipse.platform.git/
	platform-eclipse.platform.news	git://git.eclipse.org/gitroot/platform/eclipse.platform.news.git/
	platform-eclipse.platform.releng.aggregator	git://git.eclipse.org/gitroot/platform/eclipse.platform.releng.aggregator.git/
	platform-eclipse.platform.releng.basebuilder	git://git.eclipse.org/gitroot/platform/eclipse.platform.releng.basebuilder.git/
	platform-eclipse.platform.releng.buildtools	git://git.eclipse.org/gitroot/platform/eclipse.platform.releng.buildtools.git/
	platform-eclipse.platform.releng.eclipsebuilder	git://git.eclipse.org/gitroot/platform/eclipse.platform.releng.eclipsebuilder.git/
	platform-eclipse.platform.releng	git://git.eclipse.org/gitroot/platform/eclipse.platform.releng.git/
	platform-eclipse.platform.releng.maps	git://git.eclipse.org/gitroot/platform/eclipse.platform.releng.maps.git/
	platform-eclipse.platform.resources	git://git.eclipse.org/gitroot/platform/eclipse.platform.resources.git/
	platform-eclipse.platform.runtime	git://git.eclipse.org/gitroot/platform/eclipse.platform.runtime.git/
	platform-eclipse.platform.swt.binaries	git://git.eclipse.org/gitroot/platform/eclipse.platform.swt.binaries.git/
	platform-eclipse.platform.swt	git://git.eclipse.org/gitroot/platform/eclipse.platform.swt.git/
	platform-eclipse.platform.team	git://git.eclipse.org/gitroot/platform/eclipse.platform.team.git/
	platform-eclipse.platform.text	git://git.eclipse.org/gitroot/platform/eclipse.platform.text.git/
	platform-eclipse.platform.ua	git://git.eclipse.org/gitroot/platform/eclipse.platform.ua.git/
	platform-eclipse.platform.ui	git://git.eclipse.org/gitroot/platform/eclipse.platform.ui.git/
	jdt-eclipse.jdt.core.binaries	git://git.eclipse.org/gitroot/jdt/eclipse.jdt.core.binaries.git/
	jdt-eclipse.jdt.core	git://git.eclipse.org/gitroot/jdt/eclipse.jdt.core.git/
	jdt-eclipse.jdt.debug	git://git.eclipse.org/gitroot/jdt/eclipse.jdt.debug.git/
	jdt-eclipse.jdt	git://git.eclipse.org/gitroot/jdt/eclipse.jdt.git/
	jdt-eclipse.jdt.ui	git://git.eclipse.org/gitroot/jdt/eclipse.jdt.ui.git/
	equinox-rt.equinox.binaries	git://git.eclipse.org/gitroot/equinox/rt.equinox.binaries.git/
	equinox-rt.equinox.bundles	git://git.eclipse.org/gitroot/equinox/rt.equinox.bundles.git/
	equinox-rt.equinox.framework	git://git.eclipse.org/gitroot/equinox/rt.equinox.framework.git/
	equinox-rt.equinox.incubator	git://git.eclipse.org/gitroot/equinox/rt.equinox.incubator.git/
	equinox-rt.equinox.p2.cudf	git://git.eclipse.org/gitroot/equinox/rt.equinox.p2.cudf.git/
	equinox-rt.equinox.p2	git://git.eclipse.org/gitroot/equinox/rt.equinox.p2.git/
	mdt-org.eclipse.ocl	git://git.eclipse.org/gitroot/mdt/org.eclipse.ocl.git/
	mdt-papyrus-org.eclipse.papyrus	git://git.eclipse.org/gitroot/papyrus/org.eclipse.papyrus.git/
	mdt-sphinx-org.eclipse.sphinx	git://git.eclipse.org/gitroot/sphinx/org.eclipse.sphinx.git/
	tm-org.eclipse.tm	git://git.eclipse.org/gitroot/tm/org.eclipse.tm.git/
	cdt-org.eclipse.cdt	git://git.eclipse.org/gitroot/cdt/org.eclipse.cdt.git/
	eclipselink-eclipselink.runtime	git://git.eclipse.org/gitroot/eclipselink/eclipselink.runtime.git/
	eclipselink-eclipselink.releng	git://git.eclipse.org/gitroot/eclipselink/eclipselink.releng.git/
	eclipselink-incubator	git://git.eclipse.org/gitroot/eclipselink/incubator.git/
	eclipselink-javax.persistence	git://git.eclipse.org/gitroot/eclipselink/javax.persistence.git/
	mylyn-org.eclipse.mylyn.all	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.all.git/
	mylyn-org.eclipse.mylyn.builds	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.builds.git/
	mylyn-org.eclipse.mylyn.common	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.common.git/
	mylyn-org.eclipse.mylyn.context	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.context.git/
	mylyn-org.eclipse.mylyn.docs	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.docs.git/
	mylyn-org.eclipse.mylyn	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.git/
	mylyn-org.eclipse.mylyn.incubator	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.incubator.git/
	mylyn-org.eclipse.mylyn.reviews	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.reviews.git/
	mylyn-org.eclipse.mylyn.tasks	git://git.eclipse.org/gitroot/mylyn/org.eclipse.mylyn.tasks.git/
	pde-eclipse.pde.build	git://git.eclipse.org/gitroot/pde/eclipse.pde.build.git/
	pde-eclipse.pde	git://git.eclipse.org/gitroot/pde/eclipse.pde.git/
	pde-eclipse.pde.incubator	git://git.eclipse.org/gitroot/pde/eclipse.pde.incubator.git/
	pde-eclipse.pde.ui	git://git.eclipse.org/gitroot/pde/eclipse.pde.ui.git/
	rap-org.eclipse.rap	git://git.eclipse.org/gitroot/rap/org.eclipse.rap.git/
	rap-org.eclipse.rap.tools	git://git.eclipse.org/gitroot/rap/org.eclipse.rap.tools.git/
	rap-incubator-org.eclipse.rap.incubator.releng	git://git.eclipse.org/gitroot/rap/incubator/org.eclipse.rap.incubator.releng.git/
	orion-org.eclipse.orion.client	git://git.eclipse.org/gitroot/orion/org.eclipse.orion.client.git/

	orion-org.eclipse.orion.design orion-org.eclipse.orion.marketplace orion-org.eclipse.orion.server orion-orion-parent emf-org.eclipse.emf birt linuxtools-org.eclipse.linuxtools.eclipse-build linuxtools-org.eclipse.linuxtools tptp-org.eclipse.tptp.platform tptp-org.eclipse.tptp.test-results tptp-org.eclipse.tptp.test tptp-org.eclipse.tptp.trace virgo-org.eclipse.virgo.nano virgo-org.eclipse.virgo.web virgo-org.eclipse.virgo.util virgo-org.eclipse.virgo.snaps virgo-org.eclipse.virgo.medic virgo-org.eclipse.virgo.kernel-tools virgo-org.eclipse.virgo.kernel virgo-org.eclipse.virgo.web-server virgo-org.eclipse.virgo.apps virgo-org.eclipse.virgo.documentation ecf-ecf ecf-org.eclipse.ecf e4-org.eclipse.e4.ui e4-org.eclipse.e4.tools e4-org.eclipse.e4.resources e4-org.eclipse.e4.search e4-org.eclipse.e4.releng	git://git.eclipse.org/gitroot/orion/org.eclipse.orion.design.git/ git://git.eclipse.org/gitroot/orion/org.eclipse.orion.marketplace.git/ git://git.eclipse.org/gitroot/orion/org.eclipse.orion.server.git/ git://git.eclipse.org/gitroot/orion/orion-parent.git/ git://git.eclipse.org/gitroot/emf/org.eclipse.emf.git/ https://github.com/eclipse/birt.git git://git.eclipse.org/gitroot/linuxtools/org.eclipse.linuxtools.eclipse-build.git/ git://git.eclipse.org/gitroot/linuxtools/org.eclipse.linuxtools.git/ git://git.eclipse.org/gitroot/tptp/org.eclipse.tptp.platform.git/ git://git.eclipse.org/gitroot/tptp/org.eclipse.tptp.test-results.git/ git://git.eclipse.org/gitroot/tptp/org.eclipse.tptp.test.git/ git://git.eclipse.org/gitroot/tptp/org.eclipse.tptp.trace.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.nano.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.web.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.util.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.snaps.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.medic.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.kernel-tools.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.kernel.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.web-server.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.apps.git/ git://git.eclipse.org/gitroot/virgo/org.eclipse.virgo.documentation.git/ git://git.eclipse.org/gitroot/ecf/ecf.git/ git://git.eclipse.org/gitroot/ecf/org.eclipse.ecf.git/ git://git.eclipse.org/gitroot/e4/org.eclipse.e4.ui.git/ git://git.eclipse.org/gitroot/e4/org.eclipse.e4.tools.git/ git://git.eclipse.org/gitroot/e4/org.eclipse.e4.resources.git/ git://git.eclipse.org/gitroot/e4/org.eclipse.e4.search.git/ git://git.eclipse.org/gitroot/e4/org.eclipse.e4.releng.git/
FreeDesktop	cairo dbus-dbus dbus-dbus-glib dbus-dbus-java dbus-dbus-python dbus-dbus-qt dbus-dbus-qt3 dbus-dbus-test intel-vaapi-intel-driver intel-vaapi-libva libreoffice-artwork libreoffice-base libreoffice-binfilter libreoffice-bootstrap libreoffice-build libreoffice-calc libreoffice-components libreoffice-contrib-buildbot libreoffice-contrib-dev-tools libreoffice-contrib-gitdm-config libreoffice-contrib-mso-dumper libreoffice-contrib-ooecclipse libreoffice-contrib-svn-to-git libreoffice-contrib-test-files libreoffice-core libreoffice-cppunit libreoffice-dictionaries libreoffice-extensions libreoffice-extras libreoffice-filters libreoffice-help	git://anongit.freedesktop.org/cairo git://anongit.freedesktop.org/dbus/dbus git://anongit.freedesktop.org/dbus/dbus-glib git://anongit.freedesktop.org/dbus/dbus-java git://anongit.freedesktop.org/dbus/dbus-python git://anongit.freedesktop.org/dbus/dbus-qt git://anongit.freedesktop.org/dbus/dbus-qt3 git://anongit.freedesktop.org/dbus/dbus-test git://anongit.freedesktop.org/vaapi/intel-driver git://anongit.freedesktop.org/vaapi/libva git://anongit.freedesktop.org/libreoffice/artwork git://anongit.freedesktop.org/libreoffice/base git://anongit.freedesktop.org/libreoffice/binfilter git://anongit.freedesktop.org/libreoffice/bootstrap git://anongit.freedesktop.org/libreoffice/build git://anongit.freedesktop.org/libreoffice/calc git://anongit.freedesktop.org/libreoffice/components git://anongit.freedesktop.org/libreoffice/contrib/buildbot git://anongit.freedesktop.org/libreoffice/contrib/dev-tools git://anongit.freedesktop.org/libreoffice/contrib/gitdm-config git://anongit.freedesktop.org/libreoffice/contrib/mso-dumper git://anongit.freedesktop.org/libreoffice/contrib/ooecclipse git://anongit.freedesktop.org/libreoffice/contrib/svn-to-git git://anongit.freedesktop.org/libreoffice/contrib/test-files git://anongit.freedesktop.org/libreoffice/core git://anongit.freedesktop.org/libreoffice/cppunit git://anongit.freedesktop.org/libreoffice/dictionaries git://anongit.freedesktop.org/libreoffice/extensions git://anongit.freedesktop.org/libreoffice/extras git://anongit.freedesktop.org/libreoffice/filters git://anongit.freedesktop.org/libreoffice/help

	libreoffice-impress libreoffice-impress_remote libreoffice-l10n libreoffice-libabw libreoffice-libcdr libreoffice-libetonyek libreoffice-libexttextcat libreoffice-libfreehand libreoffice-libmspub libreoffice-libs-core libreoffice-libs-extern libreoffice-libs-extern-sys libreoffice-libs-gui libreoffice-libvisio libreoffice-lightproof libreoffice-original-artwork libreoffice-postprocess libreoffice-sdk libreoffice-templates libreoffice-testing libreoffice-translations libreoffice-ugly libreoffice-ure libreoffice-voting libreoffice-website libreoffice-writer mesa-clover mesa-demos mesa-drm mesa-glu mesa-glut mesa-glw mesa-lb-mesa mesa-libv-mesa-dri-i9xx mesa-libwsbm mesa-linux-agp-compat mesa-mareko-mesa mesa-mesa mesa-mesa-test mesa-r600_demo mesa-rbug-gui mesa-shader-db mesa-tasks mesa-vmwgfx wayland-libinput wayland-wayland wayland-wayland-web wayland-weston xorg-app-intel-gpu-tools xorg-driver-xf86-video-intel xorg-lib-libX11 xorg-xserver	git://anongit.freedesktop.org/libreoffice/impress git://anongit.freedesktop.org/libreoffice/impress_remote git://anongit.freedesktop.org/libreoffice/l10n git://anongit.freedesktop.org/libreoffice/libabw git://anongit.freedesktop.org/libreoffice/libcdr git://anongit.freedesktop.org/libreoffice/libetonyek git://anongit.freedesktop.org/libreoffice/libexttextcat git://anongit.freedesktop.org/libreoffice/libfreehand git://anongit.freedesktop.org/libreoffice/libmspub git://anongit.freedesktop.org/libreoffice/libs-core git://anongit.freedesktop.org/libreoffice/libs-extern git://anongit.freedesktop.org/libreoffice/libs-extern-sys git://anongit.freedesktop.org/libreoffice/libs-gui git://anongit.freedesktop.org/libreoffice/libvisio git://anongit.freedesktop.org/libreoffice/lightproof git://anongit.freedesktop.org/libreoffice/original-artwork git://anongit.freedesktop.org/libreoffice/postprocess git://anongit.freedesktop.org/libreoffice/sdk git://anongit.freedesktop.org/libreoffice/templates git://anongit.freedesktop.org/libreoffice/testing git://anongit.freedesktop.org/libreoffice/translations git://anongit.freedesktop.org/libreoffice/ugly git://anongit.freedesktop.org/libreoffice/ure git://anongit.freedesktop.org/libreoffice/voting git://anongit.freedesktop.org/libreoffice/website git://anongit.freedesktop.org/libreoffice/writer git://anongit.freedesktop.org/mesa/clover git://anongit.freedesktop.org/mesa/demos git://anongit.freedesktop.org/mesa/drm git://anongit.freedesktop.org/mesa/glu git://anongit.freedesktop.org/mesa/glut git://anongit.freedesktop.org/mesa/glw git://people.freedesktop.org/ git://people.freedesktop.org/ git://anongit.freedesktop.org/mesa/libwsbm git://anongit.freedesktop.org/mesa/linux-agp-compat git://people.freedesktop.org/ git://anongit.freedesktop.org/mesa/mesa git://anongit.freedesktop.org/mesa/mesa-test git://anongit.freedesktop.org/mesa/r600_demo git://anongit.freedesktop.org/mesa/rbug-gui git://anongit.freedesktop.org/mesa/shader-db git://anongit.freedesktop.org/mesa/tasks git://anongit.freedesktop.org/mesa/vmwgfx git://anongit.freedesktop.org/wayland/libinput git://anongit.freedesktop.org/wayland/wayland git://anongit.freedesktop.org/wayland/wayland-web git://anongit.freedesktop.org/wayland/weston git://anongit.freedesktop.org/xorg/app/intel-gpu-tools git://anongit.freedesktop.org/xorg/driver/xf86-video-intel git://anongit.freedesktop.org/xorg/lib/libX11 git://anongit.freedesktop.org/xorg/xserver
Mozilla	camino chatzilla comm-central dom-inspector graphs ipccode mobile-browser mozilla-central	https://hg.mozilla.org/camino/ https://hg.mozilla.org/chatzilla/ https://hg.mozilla.org/comm-central/ https://hg.mozilla.org/dom-inspector/ https://hg.mozilla.org/graphs/ https://hg.mozilla.org/ipccode/ https://hg.mozilla.org/mobile-browser/ https://hg.mozilla.org/mozilla-central/

	penelope pyxpcom schema-validation tamarin-redux try-comm-central venkman xforms	https://hg.mozilla.org/penelope/ https://hg.mozilla.org/pyxpcom/ https://hg.mozilla.org/schema-validation/ http://hg.mozilla.org/tamarin-redux/ https://hg.mozilla.org/try-comm-central/ https://hg.mozilla.org/venkman/ https://hg.mozilla.org/xforms/
NetBeans	community-ruby core-main ergonomics platformx	http://hg.netbeans.org/community-ruby/ http://hg.netbeans.org/core-main/ http://hg.netbeans.org/ergonomics/ http://hg.netbeans.org/platformx/
openoffice	https://github.com/apache/openoffice.git	
Gentoo	portage kde sunrise-reviewed sci portage-multirepo portage-idfetch gnome xserver perl-overlay java qt java-experimental openrc lisp hardened-refpolicy multilib-portage kde-crazy x11 keruspe quagga sparse gli catalyst emacs genkernel graaff gmt mozilla R_overlay releng gamerlay dilfridge enlightenment portage-utils lxc hardened-dev bluiness voip dev-zero bircoph dberkholz betagarden toolchain embedded-cross overlay eselect jokey desktop-effects	git://git.overlays.gentoo.org/proj/portage.git git://git.overlays.gentoo.org/proj/kde.git git://git.overlays.gentoo.org/proj/sunrise-reviewed.git git://git.overlays.gentoo.org/proj/sci.git git://git.overlays.gentoo.org/proj/portage-multirepo.git git://git.overlays.gentoo.org/proj/portage-idfetch.git git://git.overlays.gentoo.org/proj/gnome.git git://git.overlays.gentoo.org/proj/xserver.git git://git.overlays.gentoo.org/proj/perl-overlay.git git://git.overlays.gentoo.org/proj/java.git git://git.overlays.gentoo.org/proj/qt.git git://git.overlays.gentoo.org/proj/java-experimental.git git://git.overlays.gentoo.org/proj/openrc.git git://git.overlays.gentoo.org/proj/lisp.git git://git.overlays.gentoo.org/proj/hardened-refpolicy.git git://git.overlays.gentoo.org/proj/multilib-portage.git git://git.overlays.gentoo.org/proj/kde-crazy.git git://git.overlays.gentoo.org/proj/x11.git git://git.overlays.gentoo.org/user/keruspe.git git://git.overlays.gentoo.org/proj/quagga.git git://git.overlays.gentoo.org/proj/sparse.git git://git.overlays.gentoo.org/proj/gli.git git://git.overlays.gentoo.org/proj/catalyst.git git://git.overlays.gentoo.org/proj/emacs.git git://git.overlays.gentoo.org/proj/genkernel.git git://git.overlays.gentoo.org/dev/graaff.git git://git.overlays.gentoo.org/user/gmt.git git://git.overlays.gentoo.org/proj/mozilla.git git://git.overlays.gentoo.org/proj/R_overlay.git git://git.overlays.gentoo.org/proj/releng.git git://git.overlays.gentoo.org/proj/gamerlay.git git://git.overlays.gentoo.org/dev/dilfridge.git git://git.overlays.gentoo.org/proj/enlightenment.git git://git.overlays.gentoo.org/proj/portage-utils.git git://git.overlays.gentoo.org/proj/lxc.git git://git.overlays.gentoo.org/proj/hardened-dev.git git://git.overlays.gentoo.org/dev/bluiness.git git://git.overlays.gentoo.org/proj/voip.git git://git.overlays.gentoo.org/dev/dev-zero.git git://git.overlays.gentoo.org/user/bircoph.git git://git.overlays.gentoo.org/dev/dberkholz.git git://git.overlays.gentoo.org/proj/betagarden.git git://git.overlays.gentoo.org/proj/toolchain.git git://git.overlays.gentoo.org/proj/embedded-cross.git git://git.overlays.gentoo.org/dev/wrobel/overlay.git git://git.overlays.gentoo.org/proj/eselect.git git://git.overlays.gentoo.org/dev/jokey.git git://git.overlays.gentoo.org/proj/desktop-effects.git

sandbox	git://git.overlays.gentoo.org/proj/sandbox.git
planet-gentoo	git://git.overlays.gentoo.org/proj/planet-gentoo.git
mv	git://git.overlays.gentoo.org/user/mv.git
fordfrog	git://git.overlays.gentoo.org/dev/fordfrog.git
www-redesign	git://git.overlays.gentoo.org/proj/www-redesign.git
flameeyes	git://git.overlays.gentoo.org/dev/flameeyes.git
mysql	git://git.overlays.gentoo.org/proj/mysql.git
libbash	git://git.overlays.gentoo.org/proj/libbash.git
xfce	git://git.overlays.gentoo.org/proj/xfce.git
mrueg	git://git.overlays.gentoo.org/user/mrueg.git
devel	git://git.overlays.gentoo.org/proj/vdr/devel.git
glsamaker	git://git.overlays.gentoo.org/proj/glsamaker.git
aballier	git://git.overlays.gentoo.org/dev/aballier.git
vmware	git://git.overlays.gentoo.org/proj/vmware.git
ikelos	git://git.overlays.gentoo.org/dev/ikelos.git
mgorny	git://git.overlays.gentoo.org/dev/mgorny.git
gentoolkit	git://git.overlays.gentoo.org/proj/gentoolkit.git
ruby-overlay	git://git.overlays.gentoo.org/proj/ruby-overlay.git
pms	git://git.overlays.gentoo.org/proj/pms.git
eroen	git://git.overlays.gentoo.org/user/eroen.git
pva	git://git.overlays.gentoo.org/dev/pva.git
java-config	git://git.overlays.gentoo.org/proj/java-config.git
hardened-patchset	git://git.overlays.gentoo.org/proj/hardened-patchset.git
hardened-docs	git://git.overlays.gentoo.org/proj/hardened-docs.git
layman	git://git.overlays.gentoo.org/proj/layman.git
luman	git://git.overlays.gentoo.org/user/luman.git
gentoo-vdr-scripts	git://git.overlays.gentoo.org/proj/gentoo-vdr-scripts.git
testing	git://git.overlays.gentoo.org/proj/vdr/testing.git
gentoo-bsd	git://git.overlays.gentoo.org/proj/gentoo-bsd.git
mysql-extras	git://git.overlays.gentoo.org/proj/mysql-extras.git
gitolite-gentoo	git://git.overlays.gentoo.org/proj/gitolite-gentoo.git
xmw	git://git.overlays.gentoo.org/dev/xmw.git
net-tools	git://git.overlays.gentoo.org/proj/net-tools.git
gentoopm	git://git.overlays.gentoo.org/proj/gentoopm.git
gentoo-packages	git://git.overlays.gentoo.org/proj/gentoo-packages.git
devmanual	git://git.overlays.gentoo.org/proj/devmanual.git
scarabeus	git://git.overlays.gentoo.org/dev/scarabeus.git
misc	git://git.overlays.gentoo.org/proj/vps/misc.git
pms-test-suite	git://git.overlays.gentoo.org/proj/pms-test-suite.git
palmer	git://git.overlays.gentoo.org/user/palmer.git
scire	git://git.overlays.gentoo.org/proj/scire.git
suka	git://git.overlays.gentoo.org/dev/suka.git
je-fro	git://git.overlays.gentoo.org/dev/je-fro.git
gentoo-doc-translations	git://git.overlays.gentoo.org/proj/gentoo-doc-translations.git
loongson	git://git.overlays.gentoo.org/proj/loongson.git
elfix	git://git.overlays.gentoo.org/proj/elfix.git
kde-sunset	git://git.overlays.gentoo.org/proj/kde-sunset.git
DuPol	git://git.overlays.gentoo.org/user/DuPol.git
g-octave	git://git.overlays.gentoo.org/proj/g-octave.git
g-sorcery	git://git.overlays.gentoo.org/proj/g-sorcery.git
anaconda	git://git.overlays.gentoo.org/proj/anaconda.git
alexxy	git://git.overlays.gentoo.org/dev/alexxy.git
srcshelton	git://git.overlays.gentoo.org/user/srcshelton.git
benf	git://git.overlays.gentoo.org/user/benf.git
apache	git://git.overlays.gentoo.org/proj/apache.git
matsuu	git://git.overlays.gentoo.org/dev/matsuu.git
maekke	git://git.overlays.gentoo.org/dev/maekke.git
improvise	git://git.overlays.gentoo.org/user/improvise.git
systemd	git://git.overlays.gentoo.org/user/systemd.git
ltsp	git://git.overlays.gentoo.org/proj/ltsp.git
ufed	git://git.overlays.gentoo.org/proj/ufed.git

Fedora	sattvik	git://git.overlays.gentoo.org/user/sattvik.git
	livecd-tools	git://git.overlays.gentoo.org/proj/livecd-tools.git
	ruby-scripts	git://git.overlays.gentoo.org/proj/ruby-scripts.git
	overlord	git://git.overlays.gentoo.org/proj/overlord.git
	ultrabug	git://git.overlays.gentoo.org/dev/ultrabug.git
	sardemff7	git://git.overlays.gentoo.org/user/sardemff7.git
	jmbsvicetto	git://git.overlays.gentoo.org/dev/jmbsvicetto.git
	wolf31o2	git://git.overlays.gentoo.org/dev/wolf31o2.git
	gentoo-bugzilla	git://git.overlays.gentoo.org/proj/gentoo-bugzilla.git
	kernel-check	git://git.overlays.gentoo.org/proj/kernel-check.git
	NetworkManager.git	git://pkgs.fedoraproject.org/NetworkManager.git/
	PackageKit.git	git://pkgs.fedoraproject.org/PackageKit.git/
	amarok.git	git://pkgs.fedoraproject.org/amarok.git/
	anaconda.git	git://pkgs.fedoraproject.org/anaconda.git/
	audit.git	git://pkgs.fedoraproject.org/audit.git/
	autofs.git	git://pkgs.fedoraproject.org/autofs.git/
	bacula.git	git://pkgs.fedoraproject.org/bacula.git/
	bash.git	git://pkgs.fedoraproject.org/bash.git/
	bind.git	git://pkgs.fedoraproject.org/bind.git/
	binutils.git	git://pkgs.fedoraproject.org/binutils.git/
	cinnamon.git	git://pkgs.fedoraproject.org/cinnamon.git/
	cobbler.git	git://pkgs.fedoraproject.org/cobbler.git/
	compiz.git	git://pkgs.fedoraproject.org/compiz.git/
	control-center.git	git://pkgs.fedoraproject.org/control-center.git/
	coreutils.git	git://pkgs.fedoraproject.org/coreutils.git/
	cups.git	git://pkgs.fedoraproject.org/cups.git/
	curl.git	git://pkgs.fedoraproject.org/curl.git/
	dhcp.git	git://pkgs.fedoraproject.org/dhcp.git/
	digikam.git	git://pkgs.fedoraproject.org/digikam.git/
	dovecot.git	git://pkgs.fedoraproject.org/dovecot.git/
	eclipse.git	git://pkgs.fedoraproject.org/eclipse.git/
	emacs.git	git://pkgs.fedoraproject.org/emacs.git/
	empathy.git	git://pkgs.fedoraproject.org/empathy.git/
	epiphany.git	git://pkgs.fedoraproject.org/epiphany.git/
	erlang.git	git://pkgs.fedoraproject.org/erlang.git/
	evince.git	git://pkgs.fedoraproject.org/evince.git/
	evolution-data-server.git	git://pkgs.fedoraproject.org/evolution-data-server.git/
	evolution.git	git://pkgs.fedoraproject.org/evolution.git/
	file-roller.git	git://pkgs.fedoraproject.org/file-roller.git/
	firefox.git	git://pkgs.fedoraproject.org/firefox.git/
	foomatic.git	git://pkgs.fedoraproject.org/foomatic.git/
	gcc.git	git://pkgs.fedoraproject.org/gcc.git/
	gdb.git	git://pkgs.fedoraproject.org/gdb.git/
	gdm.git	git://pkgs.fedoraproject.org/gdm.git/
	gedit.git	git://pkgs.fedoraproject.org/gedit.git/
	ghc.git	git://pkgs.fedoraproject.org/ghc.git/
	ghostscript.git	git://pkgs.fedoraproject.org/ghostscript.git/
	gimp.git	git://pkgs.fedoraproject.org/gimp.git/
	glib2.git	git://pkgs.fedoraproject.org/glib2.git/
	glibc.git	git://pkgs.fedoraproject.org/glibc.git/
	gnome-applets.git	git://pkgs.fedoraproject.org/gnome-applets.git/
	gnome-games.git	git://pkgs.fedoraproject.org/gnome-games.git/
	gnome-panel.git	git://pkgs.fedoraproject.org/gnome-panel.git/
	gnome-screensaver.git	git://pkgs.fedoraproject.org/gnome-screensaver.git/
	gnome-session.git	git://pkgs.fedoraproject.org/gnome-session.git/
	gnome-settings-daemon.git	git://pkgs.fedoraproject.org/gnome-settings-daemon.git/
	gnome-shell.git	git://pkgs.fedoraproject.org/gnome-shell.git/
	grub2.git	git://pkgs.fedoraproject.org/grub2.git/
	gtk2.git	git://pkgs.fedoraproject.org/gtk2.git/
	gvfs.git	git://pkgs.fedoraproject.org/gvfs.git/
	hplip.git	git://pkgs.fedoraproject.org/hplip.git/

httpd.git	git://pkgs.fedoraproject.org/httpd.git/
ibus.git	git://pkgs.fedoraproject.org/ibus.git/
initscripts.git	git://pkgs.fedoraproject.org/initscripts.git/
jd.git	git://pkgs.fedoraproject.org/jd.git/
kde-l10n.git	git://pkgs.fedoraproject.org/kde-l10n.git/
kde-workspace.git	git://pkgs.fedoraproject.org/kde-workspace.git/
kdeadmin.git	git://pkgs.fedoraproject.org/kdeadmin.git/
kdebase-runtime.git	git://pkgs.fedoraproject.org/kdebase-runtime.git/
kdebase-workspace.git	git://pkgs.fedoraproject.org/kdebase-workspace.git/
kdebase.git	git://pkgs.fedoraproject.org/kdebase.git/
kdebindings.git	git://pkgs.fedoraproject.org/kdebindings.git/
kdeedu.git	git://pkgs.fedoraproject.org/kdeedu.git/
kdegames.git	git://pkgs.fedoraproject.org/kdegames.git/
kdegraphics.git	git://pkgs.fedoraproject.org/kdegraphics.git/
kdelibs.git	git://pkgs.fedoraproject.org/kdelibs.git/
kdemultimedia.git	git://pkgs.fedoraproject.org/kdemultimedia.git/
kdenetwork.git	git://pkgs.fedoraproject.org/kdenetwork.git/
kdepim.git	git://pkgs.fedoraproject.org/kdepim.git/
kdepimlibs.git	git://pkgs.fedoraproject.org/kdepimlibs.git/
kdesdk.git	git://pkgs.fedoraproject.org/kdesdk.git/
kdeutils.git	git://pkgs.fedoraproject.org/kdeutils.git/
kernel.git	git://pkgs.fedoraproject.org/kernel.git/
kexec-tools.git	git://pkgs.fedoraproject.org/kexec-tools.git/
krb5.git	git://pkgs.fedoraproject.org/krb5.git/
libguestfs.git	git://pkgs.fedoraproject.org/libguestfs.git/
libreoffice.git	git://pkgs.fedoraproject.org/libreoffice.git/
libselenium.git	git://pkgs.fedoraproject.org/libselenium.git/
libvirt.git	git://pkgs.fedoraproject.org/libvirt.git/
lvm2.git	git://pkgs.fedoraproject.org/lvm2.git/
mesa.git	git://pkgs.fedoraproject.org/mesa.git/
mkinitrd.git	git://pkgs.fedoraproject.org/mkinitrd.git/
nautilus.git	git://pkgs.fedoraproject.org/nautilus.git/
net-snmp.git	git://pkgs.fedoraproject.org/net-snmp.git/
nfs-utils.git	git://pkgs.fedoraproject.org/nfs-utils.git/
nss.git	git://pkgs.fedoraproject.org/nss.git/
openldap.git	git://pkgs.fedoraproject.org/openldap.git/
openoffice.org.git	git://pkgs.fedoraproject.org/openoffice.org.git/
openssh.git	git://pkgs.fedoraproject.org/openssh.git/
openssl.git	git://pkgs.fedoraproject.org/openssl.git/
pam.git	git://pkgs.fedoraproject.org/pam.git/
perl.git	git://pkgs.fedoraproject.org/perl.git/
php.git	git://pkgs.fedoraproject.org/php.git/
policycoreutils.git	git://pkgs.fedoraproject.org/policycoreutils.git/
python.git	git://pkgs.fedoraproject.org/python.git/
qbittorrent.git	git://pkgs.fedoraproject.org/qbittorrent.git/
qemu.git	git://pkgs.fedoraproject.org/qemu.git/
qt.git	git://pkgs.fedoraproject.org/qt.git/
redhat-rpm-config.git	git://pkgs.fedoraproject.org/redhat-rpm-config.git/
rhythmbox.git	git://pkgs.fedoraproject.org/rhythmbox.git/
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ruby.git	git://pkgs.fedoraproject.org/ruby.git/
samba.git	git://pkgs.fedoraproject.org/samba.git/
selinux-policy.git	git://pkgs.fedoraproject.org/selinux-policy.git/
setroubleshoot.git	git://pkgs.fedoraproject.org/setroubleshoot.git/
squid.git	git://pkgs.fedoraproject.org/squid.git/
subversion.git	git://pkgs.fedoraproject.org/subversion.git/
system-config-printer.git	git://pkgs.fedoraproject.org/system-config-printer.git/
systemd.git	git://pkgs.fedoraproject.org/systemd.git/
systemtap.git	git://pkgs.fedoraproject.org/systemtap.git/
thunderbird.git	git://pkgs.fedoraproject.org/thunderbird.git/
totem.git	git://pkgs.fedoraproject.org/totem.git/

	udev.git	git://pkgs.fedoraproject.org/udev.git/
	vim.git	git://pkgs.fedoraproject.org/vim.git/
	wine.git	git://pkgs.fedoraproject.org/wine.git/
	xen.git	git://pkgs.fedoraproject.org/xen.git/
	xorg-x11-drv-ati.git	git://pkgs.fedoraproject.org/xorg-x11-drv-ati.git/
	xorg-x11-server.git	git://pkgs.fedoraproject.org/xorg-x11-server.git/
	xulrunner.git	git://pkgs.fedoraproject.org/xulrunner.git/
	yum.git	git://pkgs.fedoraproject.org/yum.git/