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Bug Tracking Tools

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Abstract: *Why does one would like a bug pursuit tool? as a result of there's no such issue as computer code while not bugs. Sadly, these bugs will injury your name, cause a loss of revenue, and end in hours of your time spent dig through logs so as to search out and reason the defect—which is why each dev team will like bug pursuit tools. By characteristic bugs early within the development method (and if potential, before the end-user encounters them!), our groups stand a far better likelihood of having the ability to create straightforward fixes with comparatively low impact on project timelines and budgets. Likewise, providing a simple method for end-users to report bugs to our dev groups helps us modify and enhance our product over time.*

Keywords: *Trello, Bug pursuit tools, Asana Splitter*

I. INTRODUCTION

Bugs are a necessary evil, however they don't have to be a pain to influence. Bug tracking software package automates the method of chase and observation bugs, defects associate in alternative problems that impede the economical operation of an organization's technology and knowledge infrastructure. These applications alter fast identification, identification and repair of tumultuous bugs or alternative errors across multiple applications or processes. Bug tracking solutions additionally give a spread of data management tools, conducive to Associate in Nursing organization's cognitive content, and distributing key response or repair knowledge throughout a development team.

There are a unit dozens of bug tracking tools that facilitate contour and organize the defect management method. During this review, we'll make a case for what options to seem for in these tools and therefore the things to think about once making an attempt selecting the proper one. We have a tendency to additionally give a close description of the most effective bug chase software package we've come upon, with info on rating, trials, integrations, pros, cons, and more.

II. WHAT COUNT AS A SOFTWARE BUG?

A. Bug vs. Issue

In general, individuals build a distinction between the thought of a bug and a difficulty (or use your own terms—maybe you employ “defect” and “issue”, etc). notice a straightforward clarification below:

A bug is usually thought-about to be a defect (a flaw, mistake, error) within the codebase. As such, the answer involves steps like analytic and reproducing the bug and dynamic the codebase. To repair a bug, developers want data relating its surroundings, OS, browser version, etc (here's a additional in-depth definition of software system bug).

An issue is usually thought-about to span a way broader vary of potential shortcomings in a very project or product—it's not essentially associated with a haul together with your code. Looking on your organization, a difficulty may be a client criticism price tag generated through a report from the end-user, associate degree entry on the “requested features” list, a haul someone's known together with your hardware configuration, or a priority from the design team concerning the user interface.

B. Bug-tracking tool vs. Issue tracking tool

In some cases, it's fine to use “bug pursuit tools” and “issue pursuit tools” interchangeably, however in some cases, it is sensible to tell apart between them. this can be as a result of, for a few organizations, issue management very will care for a completely different lifecycle from bug pursuit. Issue management could be fully targeted on the cycle of finding end-user complaints, requests, and questions—it could involve fixing a code defect, however it doesn't forever ought to, and its main tasks would possibly comprise the responsibility of a department that's not your dev team.

C. Essentials of Bug tracking software

All For a bug following code it's important to have:

- Reporting capability – complete with fields that may allow you to give data concerning the bug, setting, module, severity, screenshots, etc.

- Assigning – What sensible may be a bug once all you'll do is use it and keep it to yourself, right?
- Progressing through the life cycle stages – advancement
- History/work log/comments
- Reports – graphs or charts
- Storage and recovery – each entity in an exceedingly testing method got to be unambiguously acknowledgeable, identical rule applies to bugs too. So, a bug following tool should give the way to own associate ID, which might be wont to store, retrieve (search) and organize bug data.

III. BUG TRACKING TOOLS

Bug trackers square measure primarily task administration tools that provide a broader vary of utility than bug news; there square measure solely some trackers that provision alone bug coverage functions. This makes it necessary to ponder whether or not or not you may incorporate the tool into your development technique as a project management tool or compel it to bug reports. you what is more presumably} have to be compelled to ponder but well the tool will integrate with the opposite merchandise you'd possibly be victimization to make bound the tactic is economical.

D. *Trello*

Trello is associate extraordinarily in vogue kanban-board based project management tool boasts one in all the sole, utmost spontaneous interfaces around. With its boards, lists, and cards system, new users are able to get the droop of Trello nearly instantly, making it most likely the quickest learning curve of presently available tools. Trello is web-based, offers in-depth integrations and cards that ar edited within the period of time, making it very simple for distributed teams to appear at the progress of their tasks and discuss them.

For bug news, lists are also conversant in represent the standing of the bug, whereas cards, representing distinct bugs, perhaps captive between those lists in step with their progress. Team members are also appointed to bugs via accumulation them to the corresponding card and alerts are also set to apprise them of any changes created to the cardboard. This method works well for tiny to medium teams that don't get to manage AN large volume of bugs, but thanks to the visual nature of Trello, it turn into ineffective once the board starts to urge overcrowded with cards leading to poor discernibility of bugs and their development [1, 5].

Pros

- Simple, intuitive interface with an occasional learning curve.
- Has a mobile utility to induce things completed on the go?
- Infinite members on a free set up.

Cons

- Not appropriate for groups with an outsized range of bugs/tasks.
- No news operate for bug standing, burn down charts, etc.
- Limited advancement customization.

Bottom Line

- Great for little groups United Nations agency don't expect plenty of bug reports however must be not to mention a bug news tool once end-user reports ar expected.
- Becomes more and less appropriate with a rise in team size and/or app quality [1, 5].

B. *Asana*

Asana may be a web-based development managing tool that tries to emphasize communication and association. Groups will organize their work into comes, sections, and tasks, which might be visualized through a kanban board or list read. Posture conjointly offers loads of integrations with the foremost widespread tools, elaborated coverage to assist track the project's progress, and advanced search functions, which might be terribly helpful for bug tracking [1, 5].

though it's not thought of troublesome to master, with confidence navigating through Asana's options takes a bit little bit of time initially; overall, the UI is sort of intuitive and simple to understand. in addition, it will handle larger groups and bug report volumes, however with restricted advancement customization, it will have a limit to the degree of complexness it will manage.

Like Trello, finish users may need a tough time submitting quality bug reports because of the shortage of structured input. the employment of associate in-app coverage tool like Instabug will facilitate that method.

Pros

- Task dependencies, progress reports, and advanced search.
- Has a mobile utility to induce things completed on the go?
- Can handle larger comes and groups.

Cons

- Most helpful options for bug tracking are solely offered on premium.
- Limited advancement customization.

Bottom Line

- It are often comparatively too powerful for the wants of terribly little groups and easy apps. Ideal for small-to-medium groups developing apps that don't seem to be terribly advanced. In-app coverage tools are required once end-user reports are expected [1, 5].

C. GitHub Issues

GitHub problems are GitHub's wrestle issue tracking and are meant to be an easy however versatile answer. GitHub problems provide a tool to assist with chase and organizing problems within the same place you're in all probability hosting your repository. Nearly all developers square measure aware of GitHub and this definitely helps the uptake of the tool at intervals your team.

GitHub problems are meant as a development managing tool, not a fanatical bug tracker, and doesn't offer a feature for issue sorts. Instead, it permits you to make Kanban boards known as project boards and uses a system of labels to differentiate between the kinds of problems. You'll produce labels for issue kind, status, etc. and filter your views by issue sorts. You'll additionally assign up to 10 users to every issue [5, 7].

Pros

- An easy however versatile huntsman that may be utilized in several eventualities.
- Links bugs to tug requests.
- Already utilized by most developers, that helps with its adoption.
- Has a mobile utility to induce things completed on the go?

Cons

- It doesn't handle giant numbers of problems well.
- It doesn't provide progress customization.
- Reports and insights square measure restricted while not the employment of plug-ins.

Bottom Line

- GitHub problems are nice for tiny to medium groups who are managing a little to moderate the number of bugs. Its several options to support communication and collaboration and enjoys the advantage of familiarity with virtually all developers. Moreover, just in case you already use GitHub for hosting your repositories, it basically comes for complimentary. If you're managing an oversized range of bugs, or need something over basic progress customization, GitHub problems aren't what you're searching for [5, 7].

D. Bugzilla

Bugzilla is one in every of the primary bug pursuit tools on the scene and is unquestionably a pioneer of bug pursuit. Developed and maintained by the Mozilla Foundation, its associate degree ASCII text file program that was originally developed as associate degree in-house bug pursuit tool for the Mozilla project.

Bugzilla could be a terribly powerful tool that's designed to be a fanatical bug hunter with options like automatic duplicate detection, advanced search choices, extremely customizable workflows, and alternative options to assist with large-scale bug pursuit wants [2, 5, 8].

Pros

- Advanced search and automatic duplicate detection.
- Highly customizable workflows.
- Actively maintained and updated by Mozilla foundation.

Cons

- Third-party services needed for cloud hosting and support.
- Outdated program and steep learning curve.

Bottom Line

- Bugzilla is one in every of the foremost powerful bug pursuit tools obtainable, however being originally developed for open supply comes, it's additionally appropriate for comes with several collaborators and/or bug reports. Moreover, the necessity for on-premise hosting is often associate degree obstacle for the tool's adoption among little groups and indie developers considering that they'll notice very little take pleasure in its advanced functionalities [2, 5].

E. Manuscript

Being solely 2 years younger than Bugzilla, FogBugz contains a long account within the realm of bug trailing. Developed by Fog Creek computer code (the same those that brought Stack Overflow and Trello to the world), it started as a passionate bug trailing tool and later

went on to feature a wiki module for documentation and support facilitate table. terribly recently, they overhauled their tool to tackle “ethical bugs” with a replacement name, integrations, design, and options, however, it's still early on to pass any judgment on those.

Consistent with its developers, Manuscript is meant for computer code development, that is why they centered on creating coverage a bug or issue as simple and painless as attainable for developers, permitting them to enter a bug with stripped effort and needed fields. Manuscript additionally integrates well with several common tools like Slack and Trello [5, 6].

Pros

- Prodigious pursuit competence and custom reports.
- Automatic crash coverage possibility.

Cons

- Advanced advancement customization on enterprise plans solely.
- Features in a roundabout way associated with bug trailing are largely too underdeveloped to be used for over basic practicality.

Bottom Line

- Manuscript may be utilized by any team size however is healthier fitted to medium to giant groups because of its nice bug trailing options, easy default workflows, and simple configuration. However, if you wish in-depth customization, you may want their enterprise to arrange. Little groups can think about Manuscript too feature-rich for his or her needs; it's not to a fault sophisticated to form it unusable for little groups, however undoubtedly overkill [5, 6].

F. Pivotal Tracker

Pivotal tracker provides nice distinguish ability on the standing of your bugs and project normally through individual workstations and powerful charts and reports. In “my workspace” every developer is in a position to visualize all the stories that square measure appointed to them in one place, that helps make certain nonentity falls through the blows. The elaborated news additionally permits the project manager to stay a watch on the progress and speed of the project to spot any problems as they occur [4, 5].

Pros

- The easy, versatile advancement that works feed of the box.
- Powerful reports and charts that enhance visibility on the project.
- Has a mobile app to urge things done on the go.

Cons

- A rigid advancement that can't be customized.
- It involves a moderate learning curve till you become familiar with its means of doing things.

Bottom Line

- Pivotal may be a great tool for any group as long as their selected workflows match crucial 's opinion on what they ought to be. it's an honest selection if you're searching for a tool with an easy advancement that works right out of the box. though it'd be a {small amount} too powerful for terribly small groups, it's not too difficult to urge within the means of their work, and with being free for up to 3 users, it are often a tempting selection [4, 5].

G. Jira Software

One of the foremost effective tools for bug trailing and project managing alike, Jira was free by Atlassian in 2004 and is currently virtually present in several various industries. The name “Jira” may be a contraction of “Gojira”, the Japanese pronunciation of Godzilla; this can be a relevance Bugzilla, that Jira embarked on as an additional usable different.

Jira's ubiquity is in direct proportion to its commanding options and functionality; it offers, to call many, refined agile development managing options like commencement and Kanban boards, commanding problem.

and job trailing with time trailing and valuation, separate Jira command language (JQL) for progressive pursuit, unconventional coverage, and custom control panel, and immense combination and strong arthropod genus. Moreover, the Atlassian bazaar delivers loads of third-party plugins that add numerous options like duplicate bug detection. With these options and additional, Jira may be a beast of a tool and might handle endless situations [3, 5].

Pros

- Authoritative bug huntsman with a complicated search that absolutely supports agile development.
- Wide, deep combinations and APIs.
- Atlassian marketplace offers 800+ plugins.
- Fully customizable workflows.
- Powerful coverage tool.

Cons

- Sharpest knowledge arc out and away.

- Heavy-duty, resource ravaging instrument.

Bottom Line

- Jira is certainly “overkill” for tiny teams; unless they need terribly specific desires for his or her workflows, selecting Jira for your tiny team’s desires doesn't be. Jira shines once utilized by medium to large groups, particularly if they need loads of customization for his or her processes and workflows. However, Jira needs a full-fledged admin or some quite formal coaching on the tool to unleash the beast inside [3, 5, 7].

Table- I: Pricewise comparison of Bug Tracking software tools [5]

| Bug Tracking Tool | Price | |
|-------------------|--|---|
| | Free | Cost |
| Trello | Trello offers a free arrange with unlimited users and a few limits on practicality, like proscribing boards to at least one integration every | While their corporate tier prices \$9.99 per member per month and available with infinite power-ups |
| Asana | Asana is unrestricted with limitless projects for up to fifteen members however with restricted options | To crack all options like unconventional pursuit, improvement data, and task dependences, attitude charges \$9.99 per user per month. |
| GitHub Issues | --- | <ul style="list-style-type: none"> • For individual designer accounts, GitHub prices \$7/month. • Organizational accounts price \$25/month for the primary 5 members and \$9/user/month for each further members. • GitHub’s business and enterprise tiers each price \$21/user/month with the enterprise tier beaked annually. |
| Bugzilla | Yes | If you need cloud hosting or support, you'll have to be compelled to ask 3rd-party facilities |
| Manuscript | Allowed for up to 2 members group | For larger groups, Script suggest a 14-day trial, when that they pay \$10/user/month |
| Pivotal Tracker | <ul style="list-style-type: none"> • For non-profit projects educational or public. • Group of up to 3 members can also practice for free with two projects and 2GB of storage | <ul style="list-style-type: none"> • The startup plan require \$12.50/month for five users, five schemes and 5GB of storage and \$29.17/month for 10 users, 10 projects and 10GB, paid yearly. • The Pro proposal bids priority support, limitless projects, and infinite storage at \$62.50/month for 15 users, \$125/month for 25 users, and \$250/month for 50 users, paid annually. |
| Jira | For open source project | <ul style="list-style-type: none"> • \$10/user/month for up to 10 users. • \$7/user/month for up to 100 users. • For more than 100 users, use Atlassian’s calculator. |

CONCLUSION

Determining on a bug chase tool to use for the event of your app are going to be confusing. The sheer number of tools that have surfaced inside the recent years and so the similar functionalities they supply can produce it robust to figure out that one is finest for you and your crew.

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