Step 1:

Continuous Integration Tool

Team City - https://www.jetbrains.com/teamcity/

#2 Features

- First 100 builds are free (can test before we buy)
- Detailed log keeping including history of builds which can be easily organized and referenced at any time
- Easy team use: ability to assign roles, sort by groups, keeps a log of all user actions
- Able to use multiple source codes in one build
- No add-ons or plug-ins required for use
- Clear, easy-to-understand visuals of the whole project from individual tests, logs, and commits to timelines of the entire project available
- Set up is fast and easy
- Doesn't use YAML, uses Kotlin

#3 Getting Started

- https://www.jetbrains.com/help/teamcity/getting-started-with-teamcity.html
- Very short set-up directions that show extra links to other set-up instructions
- Step-by-step installation guide for each service with a great installation instruction video

#4 Popularity / Longevity

- TONS of repositories that have been updated within minutes of checking the website
- Used by lots of big-name companies (Google, Netflix, NASA, Twitter) – 2.2M+ customers (very popluar)
- Started in 2000
- Lots of awards of the past 20 years
- Offices all over the world

Real Time Error Monitoring Tool

Raygun - https://raygun.com/platform/crash-reporting

#2 Features

- Free trial available (test before we buy)
- Low cost ($4/year per 10,000 events)
- Works for desktop & mobile apps
- Works with all common languages & GitHub
- Can prioritize errors to address based on how many users have been affected
- Easy to use with a team – assign issues to specific team members, easy to resolve or leave comments on each error
- Lots of visual tools available (charts, graphs, color coding)
- Identifies the exact line of code causing the error for faster turnover

- Identifies specific deployment that caused an increase in errors

#3 Getting Started

- https://raygun.com/documentation/product-guides/crash-reporting/introduction/
- Easy to use/read instructions with lots of visual help
- Offers a general overview as well as specific steps for each feature available
- Also has an option to request a demo to see how to use the product and ask specific questions to a team member - https://raygun.com/request-demo

#4 Popularity / Longevity

- Very popular, used by a lot of big-name businesses (Microsoft, HBO, CocaCola, etc)
- Has won a few tech awards recently
- Seems to have been established in 2015 or around that time
- Lots of recent Github commits – last updated 14 hours ago

Step 2:

Array	Insert Function	Append Function
Extra Large Array	1.002323007 s	4.053553 ms
Large Array	6.59452 ms	635.151 µs
Medium Array	194.096 µs	158.821 µs
Small Array	50.733 µs	108.794 µs
Tiny Array	40.064 µs	105.768 µs

The results show that the Append function is faster than Insert when the array size is bigger, but Insert is faster than Append when the array size is smaller. So in terms of scaling, the Append function is better because it performs better than Insert with bigger arrays. The difference between the two functions is that the push function adds the method on the end of the array and the unshift adds it the beginning.