

Take-Home Project: CI Pipeline Health Analyzer

Background

Bloomerang's engineering org has grown to **8 teams** shipping across **12 repositories**. Our CI/CD runs on **GitHub Actions**, and while things mostly work, engineers are increasingly frustrated. Builds feel slow, flaky tests erode trust, and nobody has a clear picture of which pipelines need the most attention. When someone asks "*Why did the build take 22 minutes?*" or "*Is this test actually flaky or did I break something?*", the answer requires manually clicking through dozens of GitHub Actions run logs.

As a Developer Experience engineer, your job is to turn raw CI data into actionable insight. Build a **working prototype** that helps an engineering team understand where their CI pipelines are hurting and what to fix first.

The Repositories

Repository	Team	Primary Stack	Avg. Daily CI Runs
bloomerang/donor-crm	CRM Core	Node.js / TypeScript	~18
bloomerang/giving-api	Payments	Node.js / TypeScript	~14
bloomerang/volunteer-portal	Volunteer	React / Next.js	~12
bloomerang/admin-console	Internal Tools	React / TypeScript	~8
bloomerang/event-processor	Platform	Python	~10
bloomerang/notification-service	Platform	Python	~6

The Workflows

Each repo has a `ci.yml` workflow triggered on pull requests. The workflows share a similar structure but differ in steps and duration.

Mock Data

Use the data below to seed your tool. Store it however you like (JSON files, SQLite, in-memory, etc.).

1. Workflow Definitions

JSON

```
{
  "workflows": [
    {
      "repo": "bloomerang/donor-crm",
      "workflow": "ci.yml",
      "jobs": [
        { "name": "lint", "avg_duration_sec": 45 },
        { "name": "typecheck", "avg_duration_sec": 62 },
        { "name": "unit-tests", "avg_duration_sec": 195 },
        { "name": "integration-tests", "avg_duration_sec": 310 },
        { "name": "build", "avg_duration_sec": 120 }
      ]
    },
    {
      "repo": "bloomerang/giving-api",
      "workflow": "ci.yml",
      "jobs": [
        { "name": "lint", "avg_duration_sec": 38 },
        { "name": "typecheck", "avg_duration_sec": 55 },
        { "name": "unit-tests", "avg_duration_sec": 140 },
        { "name": "integration-tests", "avg_duration_sec": 480 },
        { "name": "build", "avg_duration_sec": 95 }
      ]
    }
  ]
}
```

```
},
{
  "repo": "bloomerang/volunteer-portal",
  "workflow": "ci.yml",
  "jobs": [
    { "name": "lint", "avg_duration_sec": 30 },
    { "name": "typecheck", "avg_duration_sec": 48 },
    { "name": "unit-tests", "avg_duration_sec": 110 },
    { "name": "e2e-tests", "avg_duration_sec": 540 },
    { "name": "build", "avg_duration_sec": 150 }
  ]
},
{
  "repo": "bloomerang/admin-console",
  "workflow": "ci.yml",
  "jobs": [
    { "name": "lint", "avg_duration_sec": 28 },
    { "name": "typecheck", "avg_duration_sec": 40 },
    { "name": "unit-tests", "avg_duration_sec": 85 },
    { "name": "build", "avg_duration_sec": 70 }
  ]
},
{
  "repo": "bloomerang/event-processor",
  "workflow": "ci.yml",
  "jobs": [
    { "name": "lint", "avg_duration_sec": 22 },
    { "name": "unit-tests", "avg_duration_sec": 95 },
    { "name": "integration-tests", "avg_duration_sec": 260 },
    { "name": "build", "avg_duration_sec": 55 }
  ]
},
{
  "repo": "bloomerang/notification-service",
  "workflow": "ci.yml",
  "jobs": [
```

```
        { "name": "lint", "avg_duration_sec": 18 },
        { "name": "unit-tests", "avg_duration_sec": 70 },
        { "name": "build", "avg_duration_sec": 40 }
    ]
}
]
}
```

2. CI Run History (last 30 days)

Each run includes per-job results. Status is `success`, `failure`, or `cancelled`.

JSON

```
{
  "runs": [
    {
      "id": "run-001", "repo": "bloomerang/donor-crm", "branch": "feat/donor-merge-ui",
      "trigger": "pull_request", "actor": "schen", "started_at": "2026-01-08T09:12:00Z",
      "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 42 },
        { "name": "typecheck", "status": "success", "duration_sec": 58 },
        { "name": "unit-tests", "status": "success", "duration_sec": 188 },
        { "name": "integration-tests", "status": "success", "duration_sec": 305 },
        { "name": "build", "status": "success", "duration_sec": 115 }
      ],
    },
  }
```

```
        "id": "run-002", "repo": "bloomerang/donor-crm", "branch":  
"fix/duplicate-receipt",  
        "trigger": "pull_request", "actor": "mjohnson",  
"started_at": "2026-01-08T10:45:00Z",  
        "jobs": [  
            { "name": "lint", "status": "success", "duration_sec": 48  
},  
            { "name": "typecheck", "status": "success",  
"duration_sec": 65 },  
            { "name": "unit-tests", "status": "failure",  
"duration_sec": 102, "failure_message": "FAIL  
src/services/receipt.test.ts > ReceiptService > should  
deduplicate receipts for same transaction\\n\\nAssertionError:  
expected 1 to be 2\\n\\nTest timed out after 5000ms" },  
            { "name": "integration-tests", "status": "skipped" },  
            { "name": "build", "status": "skipped" }  
        ]  
    },  
    {  
        "id": "run-003", "repo": "bloomerang/donor-crm", "branch":  
"fix/duplicate-receipt",  
        "trigger": "pull_request", "actor": "mjohnson",  
"started_at": "2026-01-08T11:20:00Z",  
        "jobs": [  
            { "name": "lint", "status": "success", "duration_sec": 44  
},  
            { "name": "typecheck", "status": "success",  
"duration_sec": 60 },  
            { "name": "unit-tests", "status": "success",  
"duration_sec": 201 },  
            { "name": "integration-tests", "status": "success",  
"duration_sec": 298 },  
            { "name": "build", "status": "success", "duration_sec":  
122 }  
        ]  
    },
```

```
{
  "id": "run-004", "repo": "bloomerang/giving-api", "branch": "feat/recurring-gifts",
  "trigger": "pull_request", "actor": "agarcia",
  "started_at": "2026-01-08T14:05:00Z",
  "jobs": [
    { "name": "lint", "status": "success", "duration_sec": 40 },
    { "name": "typecheck", "status": "success", "duration_sec": 52 },
    { "name": "unit-tests", "status": "success", "duration_sec": 145 },
    { "name": "integration-tests", "status": "failure", "duration_sec": 495, "failure_message": "FAIL
tests/integration/payment_gateway.test.ts > PaymentGateway >
should process recurring charge\\n\\nError: Connection refused:
stripe-mock:12111\\nRetries exhausted after 3 attempts" },
    { "name": "build", "status": "skipped" }
  ]
},
{
  "id": "run-005", "repo": "bloomerang/giving-api", "branch": "feat/recurring-gifts",
  "trigger": "pull_request", "actor": "agarcia",
  "started_at": "2026-01-08T14:55:00Z",
  "jobs": [
    { "name": "lint", "status": "success", "duration_sec": 36 },
    { "name": "typecheck", "status": "success", "duration_sec": 58 },
    { "name": "unit-tests", "status": "success", "duration_sec": 138 },
    { "name": "integration-tests", "status": "failure", "duration_sec": 502, "failure_message": "FAIL
tests/integration/payment_gateway.test.ts > PaymentGateway >" }
```

```
should process recurring charge\n\nError: Connection refused:  
stripe-mock:12111\nRetries exhausted after 3 attempts" },  
        { "name": "build", "status": "skipped" }  
    ]  
,  
{  
    "id": "run-006", "repo": "bloomerang/giving-api", "branch":  
"feat/recurring-gifts",  
    "trigger": "pull_request", "actor": "agarcia",  
"started_at": "2026-01-08T16:10:00Z",  
    "jobs": [  
        { "name": "lint", "status": "success", "duration_sec": 39  
},  
        { "name": "typecheck", "status": "success",  
"duration_sec": 54 },  
        { "name": "unit-tests", "status": "success",  
"duration_sec": 142 },  
        { "name": "integration-tests", "status": "success",  
"duration_sec": 465 },  
        { "name": "build", "status": "success", "duration_sec":  
98 }  
    ]  
,  
{  
    "id": "run-007", "repo": "bloomerang/volunteer-portal",  
"branch": "feat/shift-calendar",  
    "trigger": "pull_request", "actor": "klee", "started_at":  
"2026-01-09T08:30:00Z",  
    "jobs": [  
        { "name": "lint", "status": "success", "duration_sec": 32  
},  
        { "name": "typecheck", "status": "success",  
"duration_sec": 50 },  
        { "name": "unit-tests", "status": "success",  
"duration_sec": 108 },
```

```
        { "name": "e2e-tests", "status": "failure",
  "duration_sec": 612, "failure_message": "FAIL
cypress/e2e/volunteer-signup.cy.ts > Volunteer Signup > should
complete multi-step registration\\n\\nTimeoutError: Timed out
retrying after 10000ms: Expected to find element:
[data-testid=\\\"step-3-submit\\\"], but never found it." },
        { "name": "build", "status": "skipped" }
    ],
},
{
    "id": "run-008", "repo": "bloomerang/volunteer-portal",
  "branch": "feat/shift-calendar",
    "trigger": "pull_request", "actor": "klee", "started_at":
"2026-01-09T09:15:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 29
},
        { "name": "typecheck", "status": "success",
"duration_sec": 46 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 115 },
        { "name": "e2e-tests", "status": "success",
"duration_sec": 558 },
        { "name": "build", "status": "success", "duration_sec": 145
}
    ],
},
{
    "id": "run-009", "repo": "bloomerang/volunteer-portal",
  "branch": "fix/timezone-display",
    "trigger": "pull_request", "actor": "tpatel", "started_at":
"2026-01-09T13:00:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 31
},
```

```
        { "name": "typecheck", "status": "success",
"duration_sec": 52 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 105 },
        { "name": "e2e-tests", "status": "failure",
"duration_sec": 590, "failure_message": "FAIL
cypress/e2e/volunteer-signup.cy.ts > Volunteer Signup > should
complete multi-step registration\\n\\nTimeoutError: Timed out
retrying after 10000ms: Expected to find element:
[data-testid=\\\"step-3-submit\\\"], but never found it." },
        { "name": "build", "status": "skipped" }
    ],
},
{
    "id": "run-010", "repo": "bloomerang/volunteer-portal",
"branch": "fix/timezone-display",
    "trigger": "pull_request", "actor": "tpatel", "started_at":
"2026-01-09T14:22:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 28
},
        { "name": "typecheck", "status": "success",
"duration_sec": 49 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 112 },
        { "name": "e2e-tests", "status": "failure",
"duration_sec": 605, "failure_message": "FAIL
cypress/e2e/volunteer-signup.cy.ts > Volunteer Signup > should
complete multi-step registration\\n\\nTimeoutError: Timed out
retrying after 10000ms: Expected to find element:
[data-testid=\\\"step-3-submit\\\"], but never found it." },
        { "name": "build", "status": "skipped" }
    ],
},
{
```

```
        "id": "run-011", "repo": "bloomerang/volunteer-portal",
"branch": "fix/timezone-display",
        "trigger": "pull_request", "actor": "tpatel", "started_at":
"2026-01-09T15:40:00Z",
        "jobs": [
            { "name": "lint", "status": "success", "duration_sec": 33
},
            { "name": "typecheck", "status": "success",
"duration_sec": 51 },
            { "name": "unit-tests", "status": "success",
"duration_sec": 118 },
            { "name": "e2e-tests", "status": "success",
"duration_sec": 530 },
            { "name": "build", "status": "success", "duration_sec": 148
}
        ]
    },
    {
        "id": "run-012", "repo": "bloomerang/admin-console",
"branch": "feat/audit-log-viewer",
        "trigger": "pull_request", "actor": "mjohnson",
"started_at": "2026-01-10T10:00:00Z",
        "jobs": [
            { "name": "lint", "status": "success", "duration_sec": 25
},
            { "name": "typecheck", "status": "success",
"duration_sec": 38 },
            { "name": "unit-tests", "status": "success",
"duration_sec": 82 },
            { "name": "build", "status": "success", "duration_sec": 68
}
        ]
    },
    {
        "id": "run-013", "repo": "bloomerang/admin-console",
"branch": "feat/audit-log-viewer",
```

```
        "trigger": "pull_request", "actor": "mjohnson",
"started_at": "2026-01-10T14:30:00Z",
        "jobs": [
            { "name": "lint", "status": "success", "duration_sec": 27
},
            { "name": "typecheck", "status": "success",
"duration_sec": 42 },
            { "name": "unit-tests", "status": "success",
"duration_sec": 88 },
            { "name": "build", "status": "success", "duration_sec": 72
}
        ]
    },
{
    "id": "run-014", "repo": "bloomerang/event-processor",
"branch": "feat/batch-events",
        "trigger": "pull_request", "actor": "rdavis", "started_at": "2026-01-10T11:15:00Z",
        "jobs": [
            { "name": "lint", "status": "success", "duration_sec": 24
},
            { "name": "unit-tests", "status": "success",
"duration_sec": 90 },
            { "name": "integration-tests", "status": "failure",
"duration_sec": 275, "failure_message": "FAILED
tests/integration/test_event_batch.py::test_large_batch_processsing\\n\\nassert len(results) == 1000\\nAssertionError: assert 998
== 1000\\n\\nDuring handling: OSError: [Errno 24] Too many open
files" },
            { "name": "build", "status": "skipped" }
        ]
},
{
    "id": "run-015", "repo": "bloomerang/event-processor",
"branch": "feat/batch-events",
```

```
        "trigger": "pull_request", "actor": "rdavis", "started_at":  
"2026-01-10T13:45:00Z",  
        "jobs": [  
            { "name": "lint", "status": "success", "duration_sec": 20  
},  
            { "name": "unit-tests", "status": "success",  
"duration_sec": 98 },  
            { "name": "integration-tests", "status": "success",  
"duration_sec": 252 },  
            { "name": "build", "status": "success", "duration_sec":  
58 }  
        ]  
    },  
    {  
        "id": "run-016", "repo": "bloomerang/notification-service",  
"branch": "feat/sms-templates",  
        "trigger": "pull_request", "actor": "klee", "started_at":  
"2026-01-10T16:00:00Z",  
        "jobs": [  
            { "name": "lint", "status": "success", "duration_sec": 19  
},  
            { "name": "unit-tests", "status": "success",  
"duration_sec": 72 },  
            { "name": "build", "status": "success", "duration_sec":  
38 }  
        ]  
    },  
    {  
        "id": "run-017", "repo": "bloomerang/giving-api", "branch":  
"fix/currency-rounding",  
        "trigger": "pull_request", "actor": "schen", "started_at":  
"2026-01-13T09:00:00Z",  
        "jobs": [  
            { "name": "lint", "status": "success", "duration_sec": 41  
},
```

```
        { "name": "typecheck", "status": "success",
"duration_sec": 57 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 148 },
        { "name": "integration-tests", "status": "failure",
"duration_sec": 488, "failure_message": "FAIL
tests/integration/payment_gateway.test.ts > PaymentGateway >
should handle multi-currency conversion\\n\\nError: Connection
refused: stripe-mock:12111\\nRetries exhausted after 3 attempts"
},
        { "name": "build", "status": "skipped" }
    ]
},
{
    "id": "run-018", "repo": "bloomerang/giving-api", "branch":
"fix/currency-rounding",
    "trigger": "pull_request", "actor": "schen", "started_at":
"2026-01-13T10:30:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 37
},
        { "name": "typecheck", "status": "success",
"duration_sec": 53 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 135 },
        { "name": "integration-tests", "status": "success",
"duration_sec": 472 },
        { "name": "build", "status": "success", "duration_sec": 92
}
    ]
},
{
    "id": "run-019", "repo": "bloomerang/donor-crm", "branch":
"feat/donor-merge-ui",
    "trigger": "pull_request", "actor": "schen", "started_at":
"2026-01-13T11:00:00Z",
```

```
"jobs": [
  { "name": "lint", "status": "success", "duration_sec": 46
},
  { "name": "typecheck", "status": "failure",
"duration_sec": 70, "failure_message":
"src/components/DonorMerge.tsx(42,5): error TS2322: Type 'string
| undefined' is not assignable to type 'string'."
},
  { "name": "unit-tests", "status": "skipped" },
  { "name": "integration-tests", "status": "skipped" },
  { "name": "build", "status": "skipped" }
]
},
{
  "id": "run-020", "repo": "bloomerang/donor-crm", "branch":
"feat/donor-merge-ui",
  "trigger": "pull_request", "actor": "schen", "started_at":
"2026-01-13T11:35:00Z",
  "jobs": [
    { "name": "lint", "status": "success", "duration_sec": 43
},
    { "name": "typecheck", "status": "success",
"duration_sec": 64 },
    { "name": "unit-tests", "status": "success",
"duration_sec": 192 },
    { "name": "integration-tests", "status": "success",
"duration_sec": 318 },
    { "name": "build", "status": "success", "duration_sec": 118
}
  ]
},
{
  "id": "run-021", "repo": "bloomerang/volunteer-portal",
"branch": "feat/shift-calendar",
  "trigger": "pull_request", "actor": "klee", "started_at":
"2026-01-14T09:00:00Z",
  "jobs": [
```

```
        { "name": "lint", "status": "success", "duration_sec": 30
},
        { "name": "typecheck", "status": "success",
"duration_sec": 47 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 106 },
        { "name": "e2e-tests", "status": "failure",
"duration_sec": 620, "failure_message": "FAIL
cypress/e2e/volunteer-signup.cy.ts > Volunteer Signup > should
complete multi-step registration\\n\\nTimeoutError: Timed out
retrying after 10000ms: Expected to find element:
[data-testid=\\\"step-3-submit\\\"], but never found it." },
        { "name": "build", "status": "skipped" }
    ]
},
{
    "id": "run-022", "repo": "bloomerang/volunteer-portal",
"branch": "feat/shift-calendar",
    "trigger": "pull_request", "actor": "klee", "started_at":
"2026-01-14T10:20:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 31
},
        { "name": "typecheck", "status": "success",
"duration_sec": 49 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 112 },
        { "name": "e2e-tests", "status": "success",
"duration_sec": 545 },
        { "name": "build", "status": "success", "duration_sec":
152 }
    ]
},
{
    "id": "run-023", "repo": "bloomerang/giving-api", "branch":
"chore/deps-upgrade",
```

```
        "trigger": "pull_request", "actor": "ci-bot", "started_at": "2026-01-15T06:00:00Z",
        "jobs": [
            { "name": "lint", "status": "success", "duration_sec": 38 },
            { "name": "typecheck", "status": "failure",
"duration_sec": 61, "failure_message": "src/services/payment.ts(118,22): error TS2345: Argument of type 'StripeEvent' is not assignable to parameter of type 'StripeEventV2'.\\n  Property 'api_version' is missing in type 'StripeEvent'." },
            { "name": "unit-tests", "status": "skipped" },
            { "name": "integration-tests", "status": "skipped" },
            { "name": "build", "status": "skipped" }
        ]
    },
    {
        "id": "run-024", "repo": "bloomerang/giving-api", "branch": "feat/pledge-tracking",
        "trigger": "pull_request", "actor": "agarcia",
        "started_at": "2026-01-15T10:00:00Z",
        "jobs": [
            { "name": "lint", "status": "success", "duration_sec": 42 },
            { "name": "typecheck", "status": "success",
"duration_sec": 56 },
            { "name": "unit-tests", "status": "success",
"duration_sec": 152 },
            { "name": "integration-tests", "status": "failure",
"duration_sec": 510, "failure_message": "FAIL
tests/integration/payment_gateway.test.ts > PaymentGateway >
should create pledge schedule\\n\\nError: Connection refused:
stripe-mock:12111\\nRetries exhausted after 3 attempts" },
            { "name": "build", "status": "skipped" }
        ]
    },
}
```

```
{
  "id": "run-025", "repo": "bloomerang/giving-api", "branch": "feat/pledge-tracking",
  "trigger": "pull_request", "actor": "agarcia",
  "started_at": "2026-01-15T11:30:00Z",
  "jobs": [
    { "name": "lint", "status": "success", "duration_sec": 39 },
    { "name": "typecheck", "status": "success",
      "duration_sec": 54 },
    { "name": "unit-tests", "status": "success",
      "duration_sec": 140 },
    { "name": "integration-tests", "status": "success",
      "duration_sec": 478 },
    { "name": "build", "status": "success", "duration_sec": 96 }
  ],
  {
    "id": "run-026", "repo": "bloomerang/donor-crm", "branch": "fix/search-performance",
    "trigger": "pull_request", "actor": "tpatel", "started_at": "2026-01-16T09:30:00Z",
    "jobs": [
      { "name": "lint", "status": "success", "duration_sec": 47 },
      { "name": "typecheck", "status": "success",
        "duration_sec": 63 },
      { "name": "unit-tests", "status": "success",
        "duration_sec": 205 },
      { "name": "integration-tests", "status": "success",
        "duration_sec": 325 },
      { "name": "build", "status": "success", "duration_sec": 128 }
    ],
  },
}
```

```
{
  "id": "run-027", "repo": "bloomerang/event-processor",
  "branch": "fix/dead-letter-retry",
  "trigger": "pull_request", "actor": "rdavis", "started_at": "2026-01-16T14:00:00Z",
  "jobs": [
    { "name": "lint", "status": "success", "duration_sec": 23 },
    { "name": "unit-tests", "status": "success", "duration_sec": 92 },
    { "name": "integration-tests", "status": "success", "duration_sec": 248 },
    { "name": "build", "status": "success", "duration_sec": 52 }
  ],
},
{
  "id": "run-028", "repo": "bloomerang/volunteer-portal",
  "branch": "fix/accessibility-nav",
  "trigger": "pull_request", "actor": "mjohnson",
  "started_at": "2026-01-17T10:00:00Z",
  "jobs": [
    { "name": "lint", "status": "success", "duration_sec": 34 },
    { "name": "typecheck", "status": "success", "duration_sec": 53 },
    { "name": "unit-tests", "status": "success", "duration_sec": 109 },
    { "name": "e2e-tests", "status": "failure", "duration_sec": 598, "failure_message": "FAIL cypress/e2e/volunteer-signup.cy.ts > Volunteer Signup > should complete multi-step registration\\n\\nTimeoutError: Timed out retrying after 10000ms: Expected to find element: [data-testid=\\\"step-3-submit\\\"], but never found it." },
    { "name": "build", "status": "skipped" }
  ]
}
```

```
        },
        {
            "id": "run-029", "repo": "bloomerang/volunteer-portal",
            "branch": "fix/accessibility-nav",
            "trigger": "pull_request", "actor": "mjohnson",
            "started_at": "2026-01-17T11:15:00Z",
            "jobs": [
                { "name": "lint", "status": "success", "duration_sec": 30
                },
                { "name": "typecheck", "status": "success",
                "duration_sec": 48 },
                { "name": "unit-tests", "status": "success",
                "duration_sec": 114 },
                { "name": "e2e-tests", "status": "success",
                "duration_sec": 535 },
                { "name": "build", "status": "success", "duration_sec": 140
                }
            ]
        },
        {
            "id": "run-030", "repo": "bloomerang/giving-api", "branch": "fix/webhook-idempotency",
            "trigger": "pull_request", "actor": "rdavis", "started_at": "2026-01-20T09:00:00Z",
            "jobs": [
                { "name": "lint", "status": "success", "duration_sec": 40
                },
                { "name": "typecheck", "status": "success",
                "duration_sec": 55 },
                { "name": "unit-tests", "status": "success",
                "duration_sec": 144 },
                { "name": "integration-tests", "status": "failure",
                "duration_sec": 498, "failure_message": "FAIL
tests/integration/payment_gateway.test.ts > PaymentGateway >
should deduplicate webhook events\\n\\nError: Connection refused:
stripe-mock:12111\\nRetries exhausted after 3 attempts" },
            ]
        }
    ]
}
```

```
        { "name": "build", "status": "skipped" }
    ],
},
{
    "id": "run-031", "repo": "bloomerang/giving-api", "branch": "fix/webhook-idempotency",
    "trigger": "pull_request", "actor": "rdavis", "started_at": "2026-01-20T10:15:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 37 },
        { "name": "typecheck", "status": "success", "duration_sec": 52 },
        { "name": "unit-tests", "status": "success", "duration_sec": 138 },
        { "name": "integration-tests", "status": "failure", "duration_sec": 505, "failure_message": "FAIL tests/integration/payment_gateway.test.ts > PaymentGateway > should deduplicate webhook events\\n\\nError: Connection refused: stripe-mock:12111\\nRetries exhausted after 3 attempts" },
        { "name": "build", "status": "skipped" }
    ],
},
{
    "id": "run-032", "repo": "bloomerang/giving-api", "branch": "fix/webhook-idempotency",
    "trigger": "pull_request", "actor": "rdavis", "started_at": "2026-01-20T13:00:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 38 },
        { "name": "typecheck", "status": "success", "duration_sec": 56 },
        { "name": "unit-tests", "status": "success", "duration_sec": 141 },
```

```
        { "name": "integration-tests", "status": "success",
  "duration_sec": 470 },
        { "name": "build", "status": "success", "duration_sec":
94 }
    ],
},
{
    "id": "run-033", "repo": "bloomerang/notification-service",
  "branch": "feat/email-batching",
    "trigger": "pull_request", "actor": "agarcia",
  "started_at": "2026-01-21T09:30:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 20
},
        { "name": "unit-tests", "status": "success",
  "duration_sec": 68 },
        { "name": "build", "status": "success", "duration_sec":
42 }
    ],
},
{
    "id": "run-034", "repo": "bloomerang/donor-crm", "branch":
"feat/custom-fields",
    "trigger": "pull_request", "actor": "agarcia",
  "started_at": "2026-01-21T10:00:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 50
},
        { "name": "typecheck", "status": "success",
  "duration_sec": 68 },
        { "name": "unit-tests", "status": "failure",
  "duration_sec": 180, "failure_message": "FAIL
src/services/receipt.test.ts > ReceiptService > should
deduplicate receipts for same transaction\\n\\nAssertionError:
expected 1 to be 2\\n\\nTest timed out after 5000ms" },
        { "name": "integration-tests", "status": "skipped" },

```

```
        { "name": "build", "status": "skipped" }
    ],
},
{
    "id": "run-035", "repo": "bloomerang/donor-crm", "branch": "feat/custom-fields",
    "trigger": "pull_request", "actor": "agarcia",
    "started_at": "2026-01-21T10:45:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 44 },
        { "name": "typecheck", "status": "success", "duration_sec": 62 },
        { "name": "unit-tests", "status": "success", "duration_sec": 198 },
        { "name": "integration-tests", "status": "success", "duration_sec": 312 },
        { "name": "build", "status": "success", "duration_sec": 120 }
    ]
},
{
    "id": "run-036", "repo": "bloomerang/volunteer-portal", "branch": "chore/vitest-migration",
    "trigger": "pull_request", "actor": "tpatel", "started_at": "2026-01-22T09:00:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 32 },
        { "name": "typecheck", "status": "success", "duration_sec": 50 },
        { "name": "unit-tests", "status": "success", "duration_sec": 78 },
        { "name": "e2e-tests", "status": "failure", "duration_sec": 615, "failure_message": "FAIL cypress/e2e/volunteer-signup.cy.ts > Volunteer Signup > should" }
```

```
complete multi-step registration\\n\\nTimeoutError: Timed out
retrying after 10000ms: Expected to find element:
[data-testid=\\\"step-3-submit\\\"], but never found it." },
      { "name": "build", "status": "skipped" }
    ],
  },
  {
    "id": "run-037", "repo": "bloomerang/volunteer-portal",
    "branch": "chore/vitest-migration",
    "trigger": "pull_request", "actor": "tpatel", "started_at":
"2026-01-22T10:30:00Z",
    "jobs": [
      { "name": "lint", "status": "success", "duration_sec": 29
},
      { "name": "typecheck", "status": "success",
"duration_sec": 47 },
      { "name": "unit-tests", "status": "success",
"duration_sec": 82 },
      { "name": "e2e-tests", "status": "failure",
"duration_sec": 602, "failure_message": "FAIL
cypress/e2e/volunteer-signup.cy.ts > Volunteer Signup > should
complete multi-step registration\\n\\nTimeoutError: Timed out
retrying after 10000ms: Expected to find element:
[data-testid=\\\"step-3-submit\\\"], but never found it." },
        { "name": "build", "status": "skipped" }
      ],
    },
    {
      "id": "run-038", "repo": "bloomerang/volunteer-portal",
      "branch": "chore/vitest-migration",
      "trigger": "pull_request", "actor": "tpatel", "started_at":
"2026-01-22T14:00:00Z",
      "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 30
},
    ],
```

```
        { "name": "typecheck", "status": "success",
"duration_sec": 48 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 80 },
        { "name": "e2e-tests", "status": "success",
"duration_sec": 540 },
        { "name": "build", "status": "success", "duration_sec":
138 }
    ]
},
{
    "id": "run-039", "repo": "bloomerang/admin-console",
"branch": "feat/role-management",
"trigger": "pull_request", "actor": "schen", "started_at":
"2026-01-23T10:00:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 26
},
        { "name": "typecheck", "status": "success",
"duration_sec": 40 },
        { "name": "unit-tests", "status": "success",
"duration_sec": 86 },
        { "name": "build", "status": "success", "duration_sec":
65 }
    ]
},
{
    "id": "run-040", "repo": "bloomerang/event-processor",
"branch": "feat/event-schema-v2",
"trigger": "pull_request", "actor": "klee", "started_at":
"2026-01-23T11:30:00Z",
    "jobs": [
        { "name": "lint", "status": "success", "duration_sec": 21
},
        { "name": "unit-tests", "status": "success",
"duration_sec": 94 },
```

```
        { "name": "integration-tests", "status": "success",
  "duration_sec": 265 },
        { "name": "build", "status": "success", "duration_sec":
56 }
    ]
}
]
}
```

3. Developer Feedback (collected from a recent internal survey)

JSON

```
{
  "feedback": [
    { "author": "schen", "team": "CRM Core", "comment": "I re-ran
giving-api CI 3 times last week because of that stripe-mock
thing. Total waste of time." },
    { "author": "klee", "team": "Volunteer", "comment": "The
volunteer-signup e2e test fails on basically every PR and it's
never actually broken. We just re-run and pray." },
    { "author": "agarcia", "team": "Payments", "comment": "Our
integration tests take 8 minutes. That's 8 minutes of
context-switching every push. I end up batching changes which
makes reviews harder." },
    { "author": "tpatel", "team": "Volunteer", "comment": "I
don't understand why we run the full e2e suite on every PR. Most
of my changes are CSS fixes." },
    { "author": "mjohnson", "team": "CRM Core", "comment": "The
receipt dedup test in donor-crm has failed on two of my PRs and
I've never touched that code. Feels flaky." },
    { "author": "rdavis", "team": "Platform", "comment": "I'd
love to know which repos are burning the most CI minutes. Feels
like we're paying for a lot of reruns." }
  ]
}
```

Your Task

Build a **working prototype** (CLI, web tool, script — whatever you think fits) that analyzes this CI data and produces actionable insights. Your tool should support the following:

1. **Pipeline health summary:** For each repo, show success rate, average run duration, and the slowest job (bottleneck). An engineer should be able to glance at this and know which repos need attention.
2. **Flaky test detection:** Identify tests that fail intermittently — same test, same error, across different branches/authors, but passes on retry. Surface the top offenders with evidence (which runs, how often, estimated developer time wasted).
3. **Improvement recommendations:** Based on your analysis, produce a prioritized list of concrete recommendations. For example, if a service container is unreliable, say so. If an e2e test is flaky, quantify the impact. Think like a DevEx engineer writing a proposal to your team lead.

Deliverables

1. **Working code** in a GitHub repo (or zip file).
2. **A README** covering how to set up and run the tool, with example output or screenshots.
3. **A brief write-up** (can be in the README or a separate doc) covering:
 - Your analysis of the data — what patterns did you find?
 - What would you do first if you joined Bloomerang's Platform Engineering team on Monday?
 - How would you evolve this tool to work with live GitHub Actions data via the API?

Evaluation Criteria

We're not looking for production polish — we're looking for:

- **Signal extraction:** Can you find the real problems in noisy data? (The data has deliberate patterns — we want to see if you find them.)
- **Prioritization:** DevEx teams can't fix everything at once. How do you decide what matters most?
- **Practical recommendations:** Vague advice like "improve CI" doesn't help. We want specifics — the kind of thing you'd put in a Slack message to a team lead.
- **Code quality:** Is it readable, organized, and does what it claims?
- **Communication:** Can you explain your findings clearly to someone who hasn't stared at the data?

Time Expectation

We expect this to take roughly **90 minutes**. Please don't spend significantly more than that. A focused analysis with clear recommendations is better than a polished solution with no insight.

A Note on Using LLMs

Using an LLM (ChatGPT, Claude, Copilot, etc.) is perfectly acceptable. If you do, please be prepared to:

- Share the prompts you used
- Walk through the generated code and explain what it does
- Discuss what you changed or decided not to use from the LLM output
- Identify any issues in the generated code you caught (or missed)

We care about your judgment and understanding, not whether you typed every character.

Questions? Reach out to your recruiting contact — we're happy to clarify.