

Human-in-the-loop (HITL)

Interact with running workflows

Human-in-the-loop

Pause a flow run to wait for input from a user via a web form (human-in-the-loop) 😊



Use cases

Machine learning labeling: check training data that a model isn't confident about




Use cases

Approval workflow: expensive model training that finance wants to sign off on



Human-in-the-loop

pause_flow_run function is your tool 



Human-in-the-loop: basic

```
from prefect import flow, pause_flow_run

@flow(log_prints=True)
def greet_user():
    name = pause_flow_run(str)
    print(f"Hello, {name}!")

if __name__ == "__main__":
    greet_user()
```



Human-in-the-loop: basic

Flow Runs / energetic-stallion

Paused

2024/01/30 02:03:03 PM

1s

None

Resume

Cancel

Flow greet-user

▼ Events

Logs

Task Runs

Subflow Runs

Results

Artifacts

Details

Parameters

Level: all

Oldest to newest

Jan 30th, 2024

INFO

Pausing flow, execution will continue when this flow run is resumed.

02:03:03 PM
prefect.flow_runs



Human-in-the-loop: basic

Jan 30th, 2024

INFO Pausing flow, execution will continue when this flow run is resumed.

Resume Flow Run

×

Current Flow Run State

Paused

Flow requires input. Please fill out the form below to resume.

Do you want to resume energetic-stallion?

Value

Jeff

Cancel

Submit



Human-in-the-loop: basic

Jan 30th, 2024

INFO

Pausing flow, execution will continue when this flow run is resumed.

02:03:03 PM
prefect.flow_runs

INFO

Resuming flow run execution!

02:06:06 PM
prefect.flow_runs

INFO

Hello, Jeff!

02:06:06 PM
prefect.flow_runs

INFO

Finished in state Completed()

02:06:07 PM
prefect.flow_runs



Human-in-the-loop: options

- Validate using *RunInput* class (subclass of Pydantic's *BaseModel*)
- Specify default value
- Add a description to a field
- Add a timeout
- Create UI form element based on data type (For example, create a dropdown)



Human-in-the-loop: default value

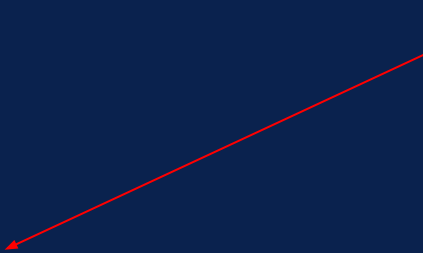
```
import asyncio
from prefect import flow, pause_flow_run
from prefect.input import RunInput

class UserNameInput(RunInput):
    name: str

@flow(log_prints=True)
async def greet_user():
    user_input = await pause_flow_run(
        wait_for_input=UserNameInput.with_initial_data(name="anonymous")
    )

    if user_input.name == "anonymous":
        print("Hello, stranger!")
    else:
        print(f"Hello, {user_input.name}!")

if __name__ == "__main__":
    asyncio.run(greet_user())
```



Human-in-the-loop: default value

Flow Runs / glistening-penguin

Paused 2024/01/11 02:12:35 PM 1s None Resume ▶

Flow greet-user

Resume Flow Run

×

Current Flow Run State

Paused

Flow requires input. Please fill out the form below to resume.

Do you want to resume glistening-penguin?

Name (Optional)

anonymous

Cancel

Submit

Details Pa

all Old

Jan 11th, 2024

INFO Pausing flow, execution will continue when this flow run is resumed.



Human-in-the-loop: custom validation

```
from typing import Literal
import pydantic
from prefect import flow, pause_flow_run
from prefect.input import RunInput

class ShirtOrder(RunInput):
    """Shirt order options"""

    size: Literal["small", "medium", "large", "xlarge"]
    color: Literal["red", "green", "black"]

    @pydantic.validator("color")
    def validate_shirt(cls, value, values, **kwargs):
        """Validate that shirt combo exists"""

        if value == "green" and values["size"] == "small":
            raise ValueError("We don't carry that combination.")
        return value
```



Human-in-the-loop: custom validation

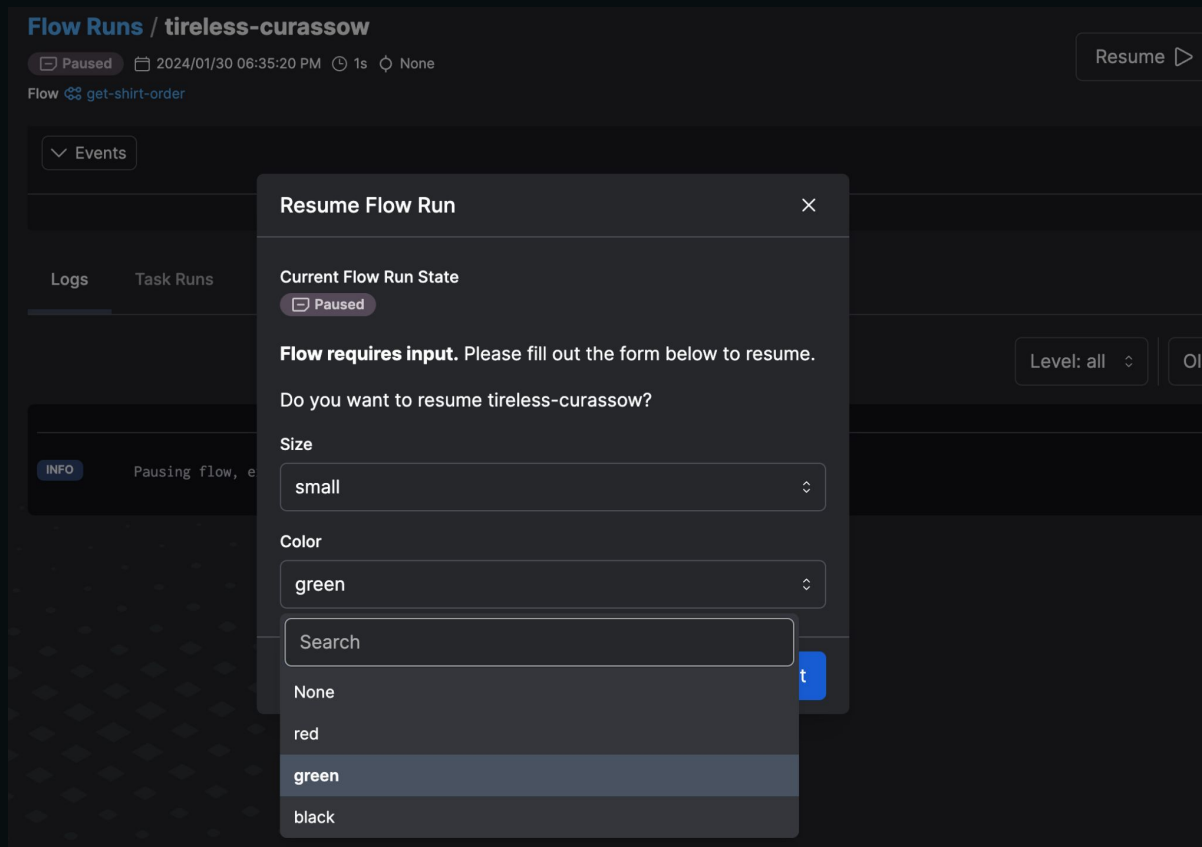
```
@flow(log_prints=True)
def get_shirt_order():
    """Get shirt selection from user via UI"""
    shirt_order = None

    while shirt_order is None:
        try:
            shirt_order = pause_flow_run(wait_for_input=ShirtOrder)
            print(f"We'll send you your shirt in {shirt_order} ASAP!")
        except pydantic.ValidationError:
            print(f"Invalid size and color combination.")

if __name__ == "__main__":
    get_shirt_order()
```



Human-in-the-loop: custom validation



Human-in-the-loop: custom validation

Jan 30th, 2024

INFO

Pausing flow, execution will continue when this flow run is resumed.

INFO

Resuming flow run execution!

INFO

Invalid size and color combination.

INFO

Pausing flow, execution will continue when this flow run is resumed.

INFO

Resuming flow run execution!

INFO

We'll send you your shirt in size='medium' color='red' ASAP!

INFO

Finished in state Completed()

