```
# Step 1: Data Collection and Processing
def collect_and_process_data():
    # Simulate data collection and cleaning
    data = ["user_behavior", "item_metadata", "ratings"]
    print("Data collected and processed")
    return data

# Step 2: Recommender Model
def train_recommender_model(data):
    # Simulate model training
    model = {"type": "collaborative_filtering", "data_used": data}
    print("Recommender model trained")
    return model

# Step 3: Recommendation Post-processing
def post_process_recommendations(model):
    # Simulate filtering, ranking, etc.
    recommendations = ["item1", "item2", "item3"]
    print("Recommendations post-processed")
    return recommendations

# Step 4: Online Modules
def
online_modules(recommendations):
    # Simula… deployment and availability of model outputs
    online_data = {"recommendations": recommendations}
    print("Online modules updated")
    return online_data
```

```
# Step 5: User Interface
def user_interface(online_data):
    # Simulate displaying recommendations
    print("User sees recommendations:", online_data["recommendations"])

# Main pipeline
if _name_ == "_main_":
    data = collect_and_process_data()
    model = train_recommender_model(data)
    recommendations = post_process_recommendations(model)
    online_data = online_modules(recommendations)
    user_interface(online_data)
```