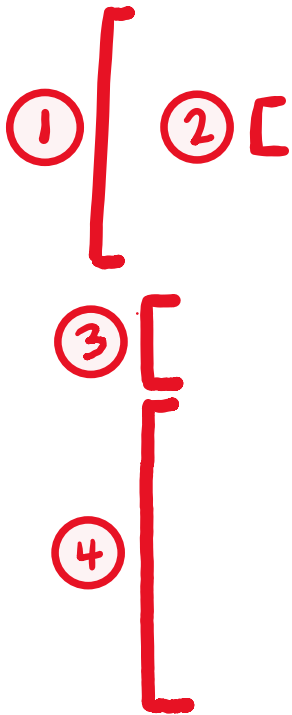# A5: White Box Testing

White box testing for creating a project and creating a task for a task management system. Below is how the paths and blocks have been broken up:
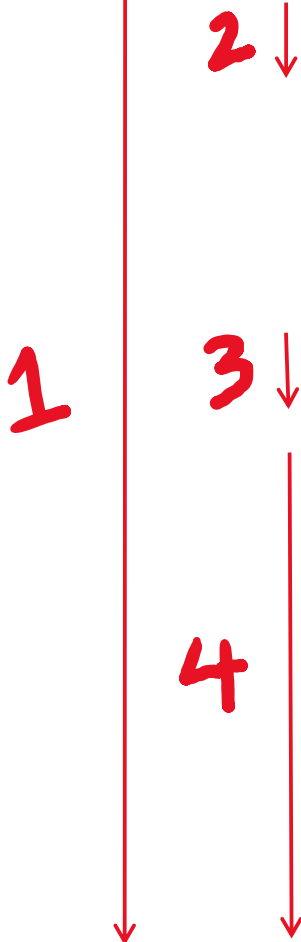
CREATE PROJECT – PATH COVERAGE

```python
def create_project():
    print("Please enter Project details: ")

    project_name = input("Enter the name of the project: ")
    if project_name == "":
        project_name = input("You must enter a name. Try again: ")
    project_id = input("Enter the project's ID: ")
    deadline = input("Project Deadline (DD-MM-YYYY): ")
    priority = input("Priority: ")
    owner = input("Enter the name of the project's manager: ")
    session = createSession()
    exisiting_proj = session.query(ProjectModel).filter(ProjectModel.project_id == project_id).first()

    if exisiting_proj:
        print("Project already exists. Try again.")
        session.close()
    #Creates a new User object and inserts it into the database table.
    else:
        new_project = ProjectModel(
            project_name = project_name,
            project_id = project_id,
            deadline = deadline,
            priority = priority,
            owner = owner,
            num_of_tasks = 0
        )
        session.add(new_project) #Add new user info to table
        session.commit()
        session.close()
        print("Project created successfully.")
```

PATH 1	PATH 2	PATH 3	PATH 4
1 → 2 → 3	1 → 3	1 → 2 → 4	1 → 4
- Empty project name input = "" - Enter existing project name (That is currently being used in the code) - "Test Project"	- Enter existing project name - "Test Project"	- Enter empty project name -> "" - Enter successful new project name - "New Test Name"	- Enter successful new project name - "Test New Name" (Or whatever variation it has to be to not clash with the above test)

CREATE TASK – BASIC BLOCK COVERAGE

1

2 ↓

3 ↓

4

```python
def create_task(project_id):
    print("Please enter task details: ")

    task_name = input(" Enter the name of the task: ")

    if task_name == "":
        task_name = input("   You need to enter a valid task name. Try again: ")

    assigned_project = project_id
    priority = input(" Priority? (Enter High, Medium, or Low): ")
    capability_level = input(" Capability Level (integer between 1 and 5): ")
    deadline = input(" Task Deadline (DD-MM-YYYY): ")
    project_portion = input(" Enter the portion of the project (e.g. 0.25 is 25%): ")

    session = createSession()
    exisiting_task = session.query(TaskModel).filter(
        TaskModel.task_name == task_name, TaskModel.assigned_project == assigned_project).first()

    if exisiting_task:
        print("Task already exists in that project. Please use another name for that task.")
        session.close()

    #Creates a new Task object and inserts it into the database table.
    else:
        project = session.query(ProjModel).filter(ProjModel.project_id == assigned_project).first()

        task_num_in_project = project.num_of_tasks + 1
        project.num_of_tasks = task_num_in_project

        new_task = TaskModel(
            task_name = task_name,
            assigned_project = assigned_project,
            priority = priority,
            capability_level = capability_level,
            deadline = deadline,
            task_num_in_project = task_num_in_project,
            project_portion = project_portion
        )
        session.add(new_task) #Add new task info to table
        session.commit()
        session.close()

        print("Task successfully created.")
```

Test Cases

Create Tasks (Whitebox Basic Block Coverage)

- *Users will be able to create tasks and projects.*
- *Users will be able to add tasks to projects.*
- *See test_create_task.py file for the following test cases*

Test Case	Input	Expected Output	Actual Output	Test Case Pass/Fail
Create a task – Testing Basic Bock 1	Task Name Priority Capability Level Deadline Project Portion	-The task should be created without errors. -Number of tasks should be updated in its respective project.	"Task successfully created."	Pass
Create a task – Testing Basic Bock 2	[] Priority Capability Level Deadline Project Portion	-User will get re-prompted to input the missing field. -Task will then be successfully created. -Number of tasks should be updated in its respective project.	"You need to enter a valid task name." ... "Task successfully created."	Pass
Create a task – Testing Basic Bock 3	Task Name Priority Capability Level Deadline Project Portion	-In this case, the task already exists. -Expect a task already exists output and prompts to enter new information if requested.	"Task already exists in that project. Please use another name for that task."	Pass
Create a task – Testing Basic Bock 4	[] Priority Capability Level Deadline Project Portion	-User will get re-prompted to input the missing field. - In this case, the task already exists. -Expect a task already exists output and prompts to enter new information if requested.	"You need to enter a valid task name." ... "Task already exists in that project. Please use another name for that task."	Pass

Test Cases
Create Projects (White Box Path Testing)

- *Users will be able to create projects.*
- *Users will be able to add tasks to projects.*
- *See test_create_project.py file for the following test cases*

Test Case	Input	Expected Output	Actual Output	Test Case Pass/Fail
Create a project – Path Test 1	Empty Project Name, then Existing Project Name Project ID Deadline Owner Priority Num of Tasks	-Project has not been created due to an empty project name -Project name is replaced with an existing project name and is not created	"You must enter a name. Project already exists. Try again."	Pass
Create a project – Path Test 2	Existing Project Name Project ID Deadline Owner Priority Num of Tasks	-User enters an existing project name -Project is not created	"Project already exists. Try again."	Pass
Create a project – Path Test 3	Empty Project Name Project ID Deadline Owner Priority Num of Tasks	- Project has not been created due to an empty project name -User is prompted again and enters a valid project name -Project is created	"You must enter a name. Project created successfully."	Pass
Create a project – Path Test 4	Project Name Project ID Deadline Owner Priority Num of Tasks	-User enters valid project name -Project is created	"Project created successfully."	Pass