Write a program that implements the FIFO page-replacement algorithm.

```
from collections import deque

def fifo_page_replacement(page_references, frame_size):
    """
    Implements the FIFO page replacement algorithm.

    Args:
    page_references: A list of page references.
    frame_size: The number of frames available.

    Returns:
    The number of page faults.
    """

    frames = deque(maxlen=frame_size)  # Use a deque for efficient FIFO operations
    page_faults = 0

    for page in page_references:
    if page not in frames:
    page_faults += 1
    frames.append(page)

    return page_faults

# Example usage
page_references = [1, 2, 3, 1, 4, 5, 1, 2, 3, 4, 5]
frame_size = 3

page_faults = fifo_page_replacement(page_references, frame_size)
print("Number of page faults:", page_faults)
```

```
from collections import deque

def fifo_page_replacement(page_references_per_process, frame_size):
    """
    Implements the FIFO page replacement algorithm for multiple processes.

    Args:
    page_references_per_process: A dictionary mapping process IDs to their
    respective page reference lists.
    frame_size: The number of frames available.

    Returns:
    A dictionary mapping process IDs to their respective page fault counts.
    """

    num_processes = len(page_references_per_process)
    frames = [deque(maxlen=frame_size) for _ in range(num_processes)]  # Create frames for each
process
    page_faults_per_process = {process_id: 0 for process_id in page_references_per_process}

    for process_id, page_references in page_references_per_process.items():
```

```
        for page in page_references:
        if page not in frames[process_id]:
                page_faults_per_process[process_id] += 1
                frames[process_id].append(page)

        return page_faults_per_process

# Example usage
page_references_per_process = {
        1: [1, 2, 3, 1, 4, 5, 1, 2, 3, 4, 5],
        2: [2, 3, 4, 5, 1, 2, 3, 4, 5, 1, 2],
        3: [3, 4, 5, 1, 2, 3, 4, 5, 1, 2, 3],
        4: [4, 5, 1, 2, 3, 4, 5, 1, 2, 3, 4],
        5: [5, 1, 2, 3, 4, 5, 1, 2, 3, 4, 5]
}
frame_size = 3

page_faults_per_process = fifo_page_replacement(page_references_per_process, frame_size)
print("Page faults per process:")
for process_id, page_faults in page_faults_per_process.items():
        print(f"Process {process_id}: {page_faults}")
```