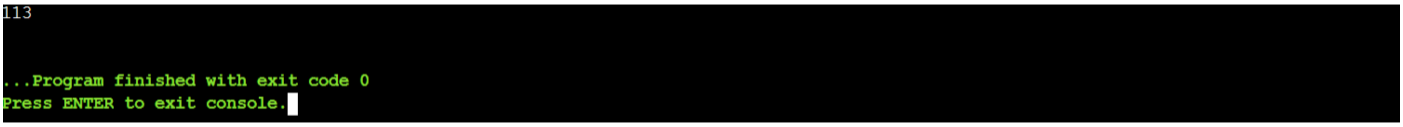
```
1) #include <stdio.h>
int main() {
  int pages[] = {12, 34, 67, 90};
  int N = 4;
  int M = 2;
  int total_pages = 0;
  int MAX_VALUE = 1000000;
  if (N < M) {
    printf("-1\n");
    return 0;
  }
  for (int i = 0; i < N; i++) {
    total_pages += pages[i];
  }
  int low = 0, high = total_pages;
  int result = MAX_VALUE;
  while (low <= high) {
    int mid = (low + high) / 2;
    int requiredStudents = 1, currentSum = 0;
    int feasible = 1;
   for (int i = 0; i < N; i++) {
      if (pages[i] > mid) {
        feasible = 0;
        break;
      }
      if (currentSum + pages[i] > mid) {
        requiredStudents++;
        currentSum = pages[i];

        if (requiredStudents > M) {
          feasible = 0;
```

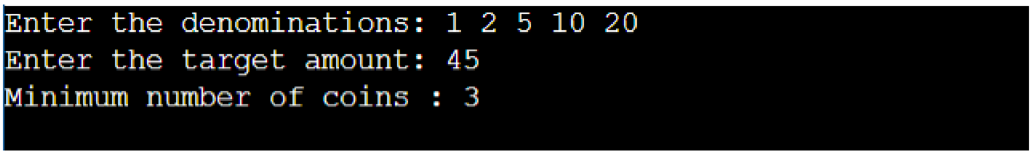
```
                    break;
                }
            } else {
                currentSum += pages[i];
            }
        }
        if (feasible) {
            result = mid;
            high = mid - 1;
        } else {
            low = mid + 1;
        }
    }
    printf("%d\n", result);
    return 0;
}
```



```
113


...Program finished with exit code 0
Press ENTER to exit console.
```

2)

```
#include <stdio.h>
int main() {
    int numDenominations, targetAmount;
    printf("Enter the number of denominations: ");
    scanf("%d", &numDenominations);
    int denominations[numDenominations];
    printf("Enter the denominations: ");
    for (int i = 0; i < numDenominations; i++) {
        scanf("%d", &denominations[i]);
    }
    printf("Enter the target amount: ");
    scanf("%d", &targetAmount);
    int INFINITY_VALUE = 1000000;
    int dp[targetAmount + 1];

    for (int i = 0; i <= targetAmount; i++) {
        dp[i] = INFINITY_VALUE;
    }
    dp[0] = 0;
    for (int currentAmount = 1; currentAmount <= targetAmount; currentAmount++) {
        for (int j = 0; j < numDenominations; j++) {
            if (denominations[j] <= currentAmount) {
                int remainingAmount = dp[currentAmount - denominations[j]];
                if (remainingAmount + 1 < dp[currentAmount]) {
                    dp[currentAmount] = remainingAmount + 1;
                }
            }
        }
    }
    if (dp[targetAmount] == INFINITY_VALUE) {
        printf("-1\n");
    } else {
        printf("Minimum number of coins : %d\n", dp[targetAmount]);
    }
    return 0;
}
```

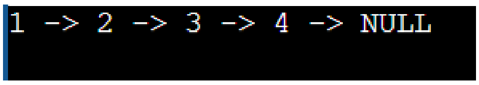


```
Enter the denominations: 1 2 5 10 20
Enter the target amount: 45
Minimum number of coins : 3
```

3)

```
#include <stdio.h>
#include <stdlib.h>
```

```
struct Node {
    int value;
    struct Node* next;
};
int main() {
    struct Node* head = (struct Node*)malloc(sizeof(struct Node));
    struct Node* second = (struct Node*)malloc(sizeof(struct Node));
    struct Node* third = (struct Node*)malloc(sizeof(struct Node));
    struct Node* fourth = (struct Node*)malloc(sizeof(struct Node));
    head->value = 1;
    head->next = second;
    second->value = 2;
    second->next = third;
    third->value = 3;
    third->next = fourth;
    fourth->value = 4;
    fourth->next = second;
    struct Node *slowPointer = head, *fastPointer = head;
    struct Node *previousNode = NULL;
    int loopDetected = 0;
    while (slowPointer && fastPointer && fastPointer->next) {
        slowPointer = slowPointer->next;
        fastPointer = fastPointer->next->next;
        if (slowPointer == fastPointer) {
            loopDetected = 1;
            break;
        }
    }
    if (loopDetected) {
        slowPointer = head;
        while (slowPointer != fastPointer) {
            previousNode = fastPointer;

            slowPointer = slowPointer->next;

            fastPointer = fastPointer->next;

        }

        previousNode->next = NULL;

    }

    struct Node* temp = head;

    while (temp != NULL) {

        printf("%d -> ", temp->value);

        temp = temp->next;

    }

    printf("NULL\n");

    free(head);

    free(second);

    free(third);

    free(fourth);

    return 0;

}
```



```
1 -> 2 -> 3 -> 4 -> NULL
```