

Program :

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#include <stdio.h>

int max(int a, int b) {
    return (a > b) ? a : b;
}

int knapsack(int W, int wt[], int val[], int n) {
    int i, w;
    int dp[n + 1][W + 1];
    for (i = 0; i <= n; i++) {
        for (w = 0; w <= W; w++) {
            if (i == 0 || w == 0)
                dp[i][w] = 0;
            else if (wt[i - 1] <= w)
                dp[i][w] = max(val[i - 1] + dp[i - 1][w - wt[i - 1]], dp[i - 1][w]);
            else
                dp[i][w] = dp[i - 1][w];
        }
    }
    return dp[n][W];
}

int main() {
    int W; // Maximum weight of knapsack
    int n; // Number of items
    printf("Enter the maximum weight of the knapsack: ");
    scanf("%d", &W);
    printf("Enter the number of items: ");
    scanf("%d", &n);
    int wt[n], val[n]; // Arrays for weights and values
    printf("Enter the weights of the items:\n");
    for (int i = 0; i < n; i++) {
        printf("Weight of item %d: ", i + 1);
        scanf("%d", &wt[i]);
    }
}
```

```

printf("Enter the values of the items:\n");

for (int i = 0; i < n; i++) {

    printf("Value of item %d: ", i + 1);

    scanf("%d", &val[i]);

}

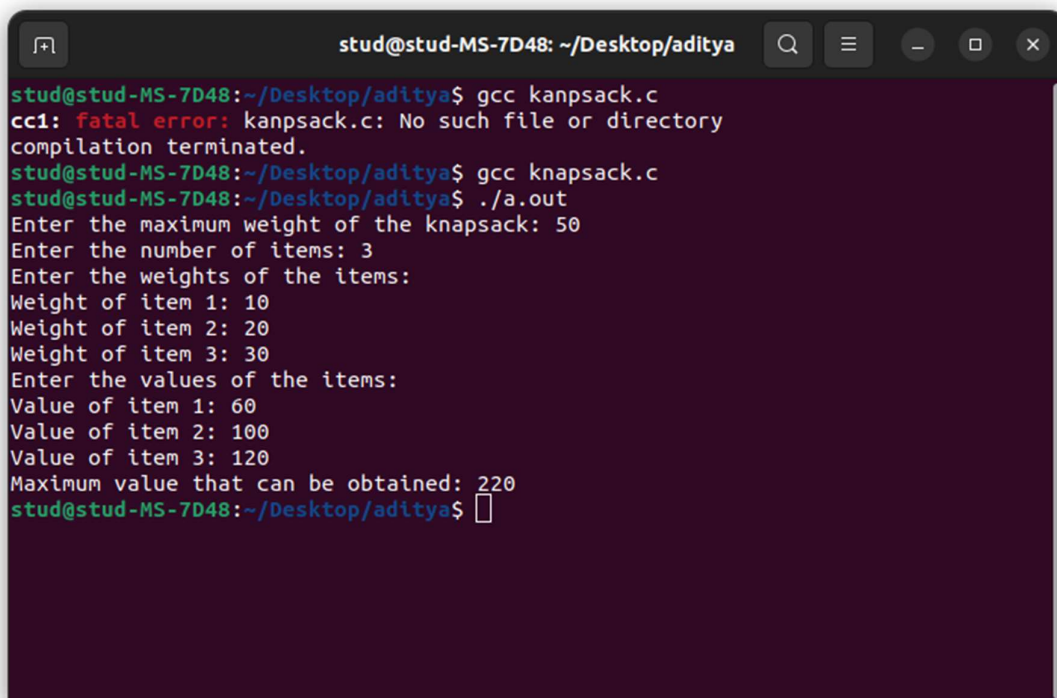
printf("Maximum value that can be obtained: %d\n", knapsack(W, wt, val, n));

return 0;

}

```

Output :



```

stud@stud-MS-7D48: ~/Desktop/aditya
stud@stud-MS-7D48:~/Desktop/aditya$ gcc knapsack.c
cc1: fatal error: knapsack.c: No such file or directory
compilation terminated.
stud@stud-MS-7D48:~/Desktop/aditya$ gcc knapsack.c
stud@stud-MS-7D48:~/Desktop/aditya$ ./a.out
Enter the maximum weight of the knapsack: 50
Enter the number of items: 3
Enter the weights of the items:
Weight of item 1: 10
Weight of item 2: 20
Weight of item 3: 30
Enter the values of the items:
Value of item 1: 60
Value of item 2: 100
Value of item 3: 120
Maximum value that can be obtained: 220
stud@stud-MS-7D48:~/Desktop/aditya$

```