**Q2 Vending Machine**

**Explanation**

**Step 1.** We first import the sys module to use the sys.maxsize() method, in order to get the largest value a variable of data type can store. The size value returned by maxsize() depends on the system's architecture, be it 32-bit or 64-bit.

**Step 2.** We then define a function called minCoins to find the minimum number of coins required. It takes 3 parameters, coins,m,v. coins will be passed as a list of numbers based on various denominations. m is the size of the list. V is the change value required.

**Step 3.** By using list comprehension, we define a list named table which will store the minimum number of coins reuiqred for each value. We first initialize all values with 0 for a required change value and define the base case as 0.

**Step 4.** Since each coin can be repeated any number of times (infinite coins), we initialize all the table values as inifinite.

**Step 5.** We then compute the minimum number of coins required from 1 to V. The outer for loop will traverse for all values from 1 to V, while the inner loop will search for coins smaller than i value. It will store the count of a single coin in the variable sub\_res and add its total value to table list.

**Step 6.** If the table reaches max size, then there must be some error in the program and hence -1 is returned. Otherwise, return the minimum coin value.

**Step 7.** Finally, we have the driver code, where we pass in three different coin denominations namely, british\_pound \_coins, us\_ dollar\_coins and norwegian\_krone\_coins. We find the number of elements in each of these lists using the len function and prompt the user for required change value. These 3 parameters are passed into the minCoins function and the result is obtained.