//Lab Exercise 5.27.2025 Problem 1
//Author: nmessa

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Problem_1
{
   class Program
   {
      static void Main(string[] args)
      {
         int count = 0;
         List<int> picks = new List<int>();
         int powerBall;
         int temp;
         Random r = new Random();

         //Generate 5 numbers
         while (count <= 5)
         {
            temp = r.Next(1,70);
            if (!picks.Contains(temp))
            {
               picks.Add(temp);
               count++;
            }
         }

         //Sort the list
         picks.Sort();

         //Pick the PowerBall
         powerBall = r.Next(1,27);

         //Print the picks and the PowerBall
         printLottery(picks, powerBall);
      }
```

```
        //This function prints out your lottery pick
        static void printLottery(List<int> p, int pb)
        {
            Console.Write("Your lottery pick is: ");
            for (int i = 0; i < 5; i++)
            {
                Console.Write(p[i] + " ");
            }
            Console.WriteLine();
            Console.WriteLine("Your PowerBall is: " + pb);
        }
    }
}
```

//Lab Exercise 5.27.2025 Problem 2
//Author: nmessa

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Problem_2
{
   class Program
   {
      static void Main(string[] args)
      {
         string[] numWords = new string[] {"ZERO", "ONE", "TWO", "THREE", "FOUR", "FIVE", "SIX",
            "SEVEN", "EIGHT", "NINE"};
         string number;
         int temp;

         //Get number from user
         Console.Write("Enter a number");
         number = Console.ReadLine();

         for (int i = 0; i < number.Length; i++)
         {
            if (Char.IsDigit(number[i]))
            {
               temp = Convert.ToInt32(number[i]) - 48;
               Console.Write(numWords[temp] + " ");
            }
            else
            {
               Console.Write(number[i]);
            }
         }
         Console.WriteLine();
      }
   }
}
```

//Lab Exercise 5.27.2025 Problem 3
//Author: nmessa

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Problem_3
{
   class Program
   {
      static void Main(string[] args)
      {
         for (int i = 1; i <= 1000; i++)
         {
            if (isHappy(i))
               Console.Write(i + " ");
         }
         Console.WriteLine();
      }

      static bool isHappy(int num)
      {
         //Create an empty list to hold results
         List<int> sad = new List<int>();

         //Initialize total to 0
         int total = 0;

         //Convert number being tested into a string
         string sNum = num.ToString();

         while (true)
         {

            //Calculate total
            for (int i = 0; i < sNum.Length; i++)
            {
               int digit = Convert.ToInt32(sNum[i]) - 48;
               total += (digit * digit);
            }
```

```
            //return True if the total is 1
            if (total == 1)
            {
               return true;
            }

            //check to see if total is in sad list
            //if it is, return False since it
            //will start repeating forever
            //if total is not in sad list, add it to
            //the sad list
            if (sad.Contains(total))
               return false;
            else
               sad.Add(total);

            //Convert total to a string
            sNum = total.ToString();

            //Reset total to 0
            total = 0;
         }
      }
   }
}
```

//Lab Exercise 5.27.2025 Problem 4
//Author: nmessa

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Problem_4
{
   class Program
   {
      static void Main(string[] args)
      {
         for (int i = 1; i <= 10000; i++)
         {
            if (isPerfect(i))
            {
               Console.Write(i + " ");
            }
         }
         Console.WriteLine();
      }

      static bool isPerfect(int num)
      {
         int total = 0;

         //Find the total of all of the divisors
         for (int div = 1; div < num; div++)
         {
            if (num%div == 0)
               total += div;
         }

         if (total == num)
            return true;
         else
            return false;
      }
   }
}
```