using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace IntroToCSharp

{

class ConditionalStatements

{

public static void Exercises5()

{

////////////1./////////////

Console.WriteLine("We weill take two variables and we will exchange their values if the second is bigger than the first number ");

Console.WriteLine("Please enter the first number: ");

int firstNum = Int32.Parse(Console.ReadLine()), temp = 0;

Console.WriteLine("Please enter the second number: ");

int secondNum = Int32.Parse(Console.ReadLine());

if (secondNum > firstNum)

{

temp = firstNum;

firstNum = secondNum;

secondNum = temp;

Console.WriteLine("The first number is now " + firstNum);

Console.WriteLine("The second number is now " + secondNum);

}

else Console.WriteLine("The second number is not larger than the first.");

////////////2./////////////

Console.WriteLine("Now let us see if we can see the sign of the product of three real numbers. Please enter three numbers");

int real1 = Convert.ToInt32(Console.ReadLine()), real2 = Convert.ToInt32(Console.ReadLine()), real3 = Convert.ToInt32(Console.ReadLine());

int negativeNumCount = 0;

if (real1 < 0)

{

negativeNumCount += 1;

}

if (real2 < 0)

{

negativeNumCount += 1;

}

if (real3 < 0)

{

negativeNumCount += 1;

}

if ((negativeNumCount == 1) || (negativeNumCount == 3))

{

Console.WriteLine("The sign of the product of these real numbers is ' - ' ");

}

else Console.WriteLine("The sign of the product of these real numbers is ' + ' ");

////////////3./////////////

Console.WriteLine("Now let us see which is the greatest integer of three integers: ");

Console.WriteLine("Please enter the first number: ");

int firstNum3 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the second number: ");

int secondNum3 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the third number: ");

int thirdNum3 = Int32.Parse(Console.ReadLine());

if (firstNum3 > secondNum3)

{

if (firstNum3 > thirdNum3) Console.WriteLine("The greatest number is:" + firstNum3);

}

else if (secondNum3 > firstNum3)

{

if (secondNum3 > thirdNum3) Console.WriteLine("The gratest number is: " + secondNum3);

}

else if (thirdNum3 > firstNum3)

{

if (thirdNum3 > secondNum3) Console.WriteLine("The greater number is: " + thirdNum3);

}

else Console.WriteLine("There are two or more equal integers selected.");

///////////4./////////////

Console.WriteLine("Now we will sort 3 numbers in descending order");

Console.WriteLine("Please enter the first number: ");

int firstNum4 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the second number: ");

int secondNum4 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the third number: ");

int thirdNum4 = Int32.Parse(Console.ReadLine()), greatestNum = 0, midNum = 0, leastNum = 0;

if ((firstNum4 >= secondNum4) && (firstNum4 >= thirdNum4))

{

greatestNum = firstNum4;

}

else if ((secondNum4 >= firstNum4) && (secondNum4 >= thirdNum4))

{

greatestNum = secondNum4;

}

else if ((thirdNum4 >= firstNum4) && (thirdNum4 >= secondNum4))

{

greatestNum = thirdNum4;

}

if ((firstNum4 >= secondNum4) && (firstNum4 <= thirdNum4))

{

midNum = firstNum4;

}

else if ((secondNum4 >= firstNum4) && (secondNum4 <= thirdNum4))

{

midNum = secondNum4;

}

else if ((thirdNum4 >= firstNum4) && (thirdNum4 <= secondNum4))

{

midNum = thirdNum4;

}

else if (secondNum4 == greatestNum) midNum = greatestNum;

if ((firstNum4 <= secondNum4) && (firstNum4 <= thirdNum4))

{

leastNum = firstNum4;

}

else if ((secondNum4 <= firstNum4) && (secondNum4 <= thirdNum4))

{

leastNum = secondNum4;

}

else if ((thirdNum4 <= firstNum4) && (thirdNum4 <= secondNum4))

{

leastNum = thirdNum4;

}

else if (thirdNum4 == greatestNum) leastNum = midNum = greatestNum;

Console.WriteLine("{0}\n {1}\n {2}", greatestNum, midNum, leastNum);

/////////5./////////////

Console.WriteLine("Now enter a number and we will print the name of the number:");

int num = Int32.Parse(Console.ReadLine());

switch (num)

{

case 1:

Console.WriteLine("One"); break;

case 2:

Console.WriteLine("Two"); break;

case 3:

Console.WriteLine("Three"); break;

case 4:

Console.WriteLine("Four"); break;

case 5:

Console.WriteLine("Five"); break;

case 6:

Console.WriteLine("Six"); break;

case 7:

Console.WriteLine("Seven"); break;

case 8:

Console.WriteLine("Eight"); break;

case 9:

Console.WriteLine("Nine"); break;

default:

Console.WriteLine("The character entered is not a number 0-9"); break;

}

///////////6./////////////

Console.WriteLine("Now we will calculate the real roots of the standard quadratic equation where ax^2 + bx + c if they exist ");

Console.WriteLine("Enter a, b, and c: ");

double a = Int32.Parse(Console.ReadLine()), b = Int32.Parse(Console.ReadLine()), c = Int32.Parse(Console.ReadLine()), discriminant = 0, root1, root2;

discriminant = Math.Pow(b, 2) - (4 \* a \* c);

if (discriminant < 0) Console.WriteLine("The given set of coefficients have no real roots");

else if (discriminant == 0)

{

root1 = -b / (2 \* a);

Console.WriteLine("The given set of coefficients one real root: " + root1);

}

else if (discriminant > 0)

{

root1 = (-b + Math.Sqrt(Math.Pow(b, 2) - (4 \* a \* c))) / 2 \* a;

root2 = (-b - Math.Sqrt(Math.Pow(b, 2) - (4 \* a \* c))) / 2 \* a;

Console.WriteLine("The given set of coefficients have two real roots: " + root1 + " and " + root2);

}

///////////7./////////////

Console.WriteLine("Now let us see which is the greatest integer of 5 integers: ");

Console.WriteLine("Please enter the first number: ");

int firstNum5 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the second number: ");

int secondNum5 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the third number: ");

int thirdNum5 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the fourth number: ");

int fourthNum5 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the fifth number: ");

int fifthNum5 = Int32.Parse(Console.ReadLine());

int[] nums = { firstNum5, secondNum5, thirdNum5, fourthNum5, fifthNum5 };

int greatest5 = nums.Max();

Console.WriteLine("The greatest number entered is: " + greatest5);

///////////8./////////////

Console.WriteLine("Now select what type of variable you would like to input. Enter int, double, or string:");

string inputType = Console.ReadLine();

switch (inputType)

{

case "int":

int newint = Convert.ToInt32(Console.ReadLine());

newint += 1;

Console.WriteLine("Here is the int + 1: " + newint);

break;

case "double":

double newdouble = Convert.ToDouble(Console.ReadLine());

newdouble += 1;

Console.WriteLine("Here is the double + 1: " + newdouble);

break;

case "string":

string newString = Console.ReadLine();

Console.WriteLine(newString + "\*");

break;

default:

Console.WriteLine("You did not enter a valid data type");

break;

}

///////////9./////////////

Console.WriteLine("Now let us see if there are any subsets that sum to 0 from 5 selected numbers: ");

Console.WriteLine("Please enter the first number: ");

int firstNum9 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the second number: ");

int secondNum9 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the third number: ");

int thirdNum9 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the fourth number: ");

int fourthNum9 = Int32.Parse(Console.ReadLine());

Console.WriteLine("Please enter the fifth number: ");

int fifthNum9 = Int32.Parse(Console.ReadLine()), temp9;

int[] nums9 = { firstNum9, secondNum9, thirdNum9, fourthNum9, fifthNum9 };

bool foundSubset = false;

for(int iter = 0; iter < 5; iter++)

{

for(int singleCombos = 0; singleCombos < 5; singleCombos++)

{

temp9 = nums9[iter] + nums9[singleCombos];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[iter] + " and " + nums9[singleCombos]);

}

}

}

temp9 = nums9[0] + nums9[1] + nums9[2];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[0] + " and " + nums9[1] + " and " + nums9[2]);

}

temp9 = nums9[0] + nums9[1] + nums9[2] + nums9[3];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[0] + " and " + nums9[1] + " and " + nums9[2] + " and " + nums9[3]);

}

temp9 = nums9[0] + nums9[1] + nums9[2] + nums9[3] + nums9[4];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[0] + " and " + nums9[1] + " and " + nums9[2] + " and " + nums9[3] + " and " + nums9[4]);

}

temp9 = nums9[1] + nums9[2] + nums9[3] + nums9[4];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[1] + " and " + nums9[2] + " and " + nums9[3] + " and " + nums9[4]);

}

temp9 = nums9[2] + nums9[3] + nums9[4];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[2] + " and " + nums9[3] + " and " + nums9[4]);

}

temp9 = nums9[0] + nums9[2] + nums9[3] + nums9[4];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[0] + " and " + nums9[2] + " and " + nums9[3] + " and " + nums9[4]);

}

temp9 = nums9[0] + nums9[3] + nums9[4];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[0] + " and " + nums9[3] + " and " + nums9[4]);

}

temp9 = nums9[1] + nums9[2] + nums9[4];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[1] + " and " + nums9[2] + " and " + nums9[4]);

}

temp9 = nums9[1] + nums9[3] + nums9[4];

if (temp9 == 0)

{

Console.WriteLine("Found subsets with " + nums9[1] + " and " + nums9[3] + " and " + nums9[4]);

}

///////////10.////////////

Console.WriteLine("Now we will apply bonus points to given test scores in the range of 1 - 9. Enter the test score:");

int testScore = Convert.ToInt32(Console.ReadLine());

switch(testScore)

{

case 1:

case 2:

case 3:

testScore \*= 10;

Console.WriteLine("The bonus score is: " + testScore);

break;

case 4:

case 5:

case 6:

testScore \*= 100;

Console.WriteLine("The bonus score is: " + testScore);

break;

case 7:

case 8:

case 9:

testScore \*= 1000;

Console.WriteLine("The bonus score is: " + testScore);

break;

default:

Console.WriteLine("There is an error in the inputted score, please try again!");

break;

}

///////////11.////////////

Console.WriteLine("Now we will print the name of any number from 0 to 999:");

string Numerical = Console.ReadLine(), numNameH = "", numNameT = "", numNameO = "";

int hundredths = 0, tens = 0, ones = 0;

int[] num0to999 = new int[Numerical.Length];

for(int digPlace = 0; digPlace < Numerical.Length; digPlace++)

{

num0to999[digPlace] = Int32.Parse(Numerical[digPlace].ToString());

}

if (Numerical.Length == 3)

{

hundredths = num0to999[0];

tens = num0to999[1];

ones = num0to999[2];

switch (hundredths)

{

case 1: numNameH = "One hundred ";

break;

case 2: numNameH = "Two hundred ";

break;

case 3: numNameH = "Three hundred ";

break;

case 4: numNameH = "Four hundred ";

break;

case 5: numNameH = "Five hundred ";

break;

case 6: numNameH = "Six hundred ";

break;

case 7: numNameH = "Seven hundred ";

break;

case 8: numNameH = "Eight hundred ";

break;

case 9: numNameH = "Nine hundred ";

break;

default:

break;

}

switch (tens)

{

case 1:

switch (ones)

{

case 1:

numNameO = "and Eleven";

break;

case 2:

numNameO = "and Twelve";

break;

case 3:

numNameO = "and Thirteen;";

break;

case 4:

numNameO = "and Fourteen";

break;

case 5:

numNameO = "and Fifteen";

break;

case 6:

numNameO = "and Sixteen";

break;

case 7:

numNameO = "and Seventeen";

break;

case 8:

numNameO = "and Eighteen";

break;

case 9:

numNameO = "and Nineteen";

break;

default:

numNameO = "Invalid number";

break;

}

break;

case 2:

numNameT = "Twenty ";

break;

case 3:

numNameT = "Thirty ";

break;

case 4:

numNameT = "Fourty ";

break;

case 5:

numNameT = "Fifty ";

break;

case 6:

numNameT = "Sixty ";

break;

case 7:

numNameT = "Seventy ";

break;

case 8:

numNameT = "Eighty ";

break;

case 9:

numNameT = "Ninety ";

break;

default:

break;

}

switch (ones)

{

case 1:

numNameO = "One";

break;

case 2:

numNameO = "Two";

break;

case 3:

numNameO = "Three;";

break;

case 4:

numNameO = "Four";

break;

case 5:

numNameO = "Five";

break;

case 6:

numNameO = "Six";

break;

case 7:

numNameO = "Seven";

break;

case 8:

numNameO = "Eight";

break;

case 9:

numNameO = "Nine";

break;

default:

numNameO = "Invalid number";

break;

}

Console.WriteLine("Name: " + numNameH + numNameT + numNameO);

}

else if (Numerical.Length == 2)

{

tens = num0to999[0];

ones = num0to999[1];

switch (tens)

{

case 1:

switch (ones)

{

case 1:

numNameO = "Eleven";

break;

case 2:

numNameO = "Twelve";

break;

case 3:

numNameO = "Thirteen;";

break;

case 4:

numNameO = "Fourteen";

break;

case 5:

numNameO = "Fifteen";

break;

case 6:

numNameO = "Sixteen";

break;

case 7:

numNameO = "Seventeen";

break;

case 8:

numNameO = "Eighteen";

break;

case 9:

numNameO = "Nineteen";

break;

default:

numNameO = "Invalid number";

break;

}

break;

case 2:

numNameT = "Twenty ";

break;

case 3:

numNameT = "Thirty ";

break;

case 4:

numNameT = "Fourty ";

break;

case 5:

numNameT = "Fifty ";

break;

case 6:

numNameT = "Sixty ";

break;

case 7:

numNameT = "Seventy ";

break;

case 8:

numNameT = "Eighty ";

break;

case 9:

numNameT = "Ninety ";

break;

default:

break;

}

if (tens != 1)

{

switch (ones)

{

case 1:

numNameO = "One";

break;

case 2:

numNameO = "Two";

break;

case 3:

numNameO = "Three;";

break;

case 4:

numNameO = "Four";

break;

case 5:

numNameO = "Five";

break;

case 6:

numNameO = "Six";

break;

case 7:

numNameO = "Seven";

break;

case 8:

numNameO = "Eight";

break;

case 9:

numNameO = "Nine";

break;

default:

numNameO = "Invalid number";

break;

}

}

Console.WriteLine("Name: " + numNameT + numNameO);

}

else if (Numerical.Length == 1)

{

ones = num0to999[0];

switch (ones)

{

case 1:

numNameO = "One";

break;

case 2:

numNameO = "Two";

break;

case 3:

numNameO = "Three;";

break;

case 4:

numNameO = "Four";

break;

case 5:

numNameO = "Five";

break;

case 6:

numNameO = "Six";

break;

case 7:

numNameO = "Seven";

break;

case 8:

numNameO = "Eight";

break;

case 9:

numNameO = "Nine";

break;

default:

numNameO = "Invalid number";

break;

}

Console.WriteLine("Name: " + numNameO);

}

}

}

}