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COSC 430

ShellTerminal

Code:

**#include <stdio.h>**

**#include <string.h>**

**#include <stdlib.h>**

//function pointer to point display message

**typedef** **void** (\*pfnMessage)(const **char**\*,**float** fResult);

//function pointer to point arithmetic function

**typedef** **float** (\*pfnCalculator)(**float**,**float**);

//structure of function pointer

**typedef** **struct** S\_sArithMaticOperation

{

**float** iResult;

pfnMessage DisplayMessage;

pfnCalculator ArithmaticOperation;

} sArithMaticOperation;

//Perform Addition

**float** Addition(**float** a, **float** b)

{

**return** (a + b);

}

//Perform Subtraction

**float** Subtraction(**float** a, **float** b)

{

**return** (a - b);

}

//Perform Multiplication

**float** Multiplication(**float** a, **float** b)

{

**return** (a\*b);

}

//Perform Division

**float** Division(**float** a, **float** b)

{

**return** (a/b);

}

//Function display message

**void** Message(const **char** \*pcMessage, **float** fResult)

{

printf("\n\n %s = %f\n\n\n\n",pcMessage,fResult);

}

//perform Arithmetic operation

**void** PerformCalculation(**float** x, **float** y, sArithMaticOperation

\*funptr,const **char** \*pcMessage )

{

//Call function as per the user choice

**float** result = funptr->ArithmaticOperation(x,y);

//Display the Message

funptr->DisplayMessage(pcMessage,result);

}

**int** main()

{

**char** szMessage[32] = {0};

**int** iChoice = 0;

**float** fData1 = 0.0f;

**float** fData2 = 0.0f;

sArithMaticOperation \*pS = **NULL**;

pS = malloc(sizeof(sArithMaticOperation));

**if** (pS == **NULL**)

{

**return** -1;

}

pS->DisplayMessage = &Message;

**while**(1)

{

printf("\n\n 1.Add \n\

2.Sub \n\

3.Mul \n\

4.Div \n\

5.Exit \n\n\n");

printf(" Enter the operation Choice = ");

scanf("%d",&iChoice);

switch(iChoice)

{

case 1 :

printf("\n Enter the numbers : ");

scanf("%f",&fData1);

printf("\n Enter the numbers : ");

scanf("%f",&fData2);

pS->ArithmaticOperation = &Addition;

strcpy(szMessage,"Addition of two Number = ");

break;

case 2 :

printf("\n Enter the numbers :");

scanf("%f",&fData1);

printf("\n Enter the numbers :");

scanf("%f",&fData2);

pS->ArithmaticOperation = &Subtraction;

strcpy(szMessage,"Subtraction of two Number = ");

break;

case 3 :

printf("\n Enter the numbers :");

scanf("%f",&fData1);

printf("\n Enter the numbers :");

scanf("%f",&fData2);

pS->ArithmaticOperation = &Multiplication;

strcpy(szMessage,"Multiplication of two Number = ");

break;

case 4 :

printf("\n Enter the numbers :");

scanf("%f",&fData1);

printf("\n Enter the numbers :");

scanf("%f",&fData2);

pS->ArithmaticOperation = &Division;

strcpy(szMessage,"Division of two Number = ");

break;

case 5 :

printf(" \n Invalid Choice :\n\n");

exit(0);

}

//Calling Desire arithmetic function

PerformCalculation(fData1,fData2,pS,szMessage);

}

//Free the allocated memory

free(pS);

**return** 0;

}

Result:

