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Subject Code : CS 291

Assignment : H

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//H.1

```
#include <stdio.h>
#include <stdlib.h>

void display( float a, float b, char ch, float r);
void add (float a, float b); void subtract (float
a, float b);
void multiply (float a, flaot b);
void divide ( float a, float b);

int main()
```

```
{
        float a, b;
        int ch;
        do{
                printf("Enter two numbers : ");
                scanf("%f %f", &a, &b);
                printf("\n1.Addition");
                printf("\n2.Subtraction");
                printf("\n3.Multiplication");
                printf("\n4.Division");
                printf("\n5.Exit");

                printf("\nEnter your choice: ");
                scanf("%d", &ch);

                switch(ch){
                        case 1: add(a, b);
                                        break;
                    case 2: subtract(a, b);
                                    break;
                    case 3: multiply(a, b);
```

```
                        break;
                case 4: divide(a, b);
                        break;
                case 5: exit(0);
                default: printf("\nInvalid input");
            }
        } while(1);
        return 0;
}

void add (float a, float b){
        float r = a+b;
        display (a, b, '+', r);
}
void subtract (float a, float b){
        float r = a-b;
        display (a, b, '-', r);
}

void multiply (float a, float b){
        float r = a*b;
```

```
        display (a, b, '*', r);
}
void divide (float a, float b){
        float r = a/b;
        display (a, b, '-', r);
}
void display( float a, float b, char ch, float r){
        printf("%.2f %c %.2f = %.2f\n", a, ch, b, r);
}
```

//H.2

```
#include <stdio.h>
#include <stdlib.h>

int factors (int n);
int primefactors (int n);
int factorial (int n);
```

```
int isPrime (int n);
int isFibonacci (int n);
int count (int n);
int isArmstrong (int n);
int isPerfect (int n);

int main()
{
        int i, n, ch;
        printf("Enter any integer: ");
        scanf("%d", &n);


        printf ("\n1. Factors of the number"); printf
        ("\n2. Prime factors of the number"); printf
        ("\n3. Factorial of the number"); printf ("\n4.
        Number is prime or not ?");

        printf ("\n5. Number is in Fibonacci series or not ?");
        printf ("\n6. Count the number of digits");

        printf ("\n7. Number is Armstrong or not ?");
        printf ("\n8. Number is perfect or not");


        printf("Enter your choice");
```

```
scanf("%d", &ch);
do{
        switch(ch){
                case 1: factors (int n);
                                break;
                  case 2: primeFactors (int n);
                                  break;
                case 3: factorial (int n);
                                break;
                case 4: isPrime (int n);
                                break;
                case 5: isFibonacci (int n);
                                break;
                case 6: count (int n);
                                break;
                  case 7: isArmstrong (int n);
                                  break;
                case 8: isPerfect (int n);
                                break;
                case 9: exit(0);
                default: printf("\nInvalid Input !!");
```

```
            }
        } while (1);
        return ;
}

int factors (int n) {
        int i;
        printf("Factors of %d are :", n);
        for (i = 1; i <= n; ++i){
            if(n % i == 0);
            {
                printf("%d\t", i);
            }
        }
}

int factorial (int n) {
        int i, fact = 1, n;
        for( i=1; i<=n ; ++i){
            fact = fact*i;
        }
```

```
        printf("\nFactorial of the given number is : %d", fact);
        return fact;
}

    int isPrime (int n) {
          int i, ifPrime;
        for( i=2; i<=n-1; i++)
        {
              if(n % i ==0)
                    { ifPrime = 0; } else {
              ifPrime = 1 ;}
        }
        return (ifPrime);
}

int count (int n) {
        int cnt = 0;
        if(n> 0){
              cnt++;
              cnt(n/10);
        }
        else { return count;}
```

```
}

int isPerfect (int n) {
        int s = sqrt(n);
        if(s*s == n)
                return 1;
        else
                return 0;
}

int primeFactors (int n) {
        int n;
            factors( isPrime( n));
}
```

//H.3

```
#include <stdio.h>
#include <stdlib.h>
```

```
int sort(int a[], int n)
{
	for(int i = 0; i < n-1; i++)
	{
		for(int j = 0; j < n-1; j++)
		{
			if([j] > a[j+1])
			{
				int temp = a[j];
				a[j] = a[j+1];
				a[j+1] = temp;
			}
		}
	}
}

int isEqual (int a1[], int a2[], int n, int m)
{
	sort (a1,n);
	sort (a2,m);
	for (i = 0; i < n; i++)
```

```
        {
                if(a1[i] != a2[i])
                {
                        return 0;
                }
        }
}

int main()
{
        int n, m;
        printf ("Enter the size of the First and the Second matrix,
        respectively:
\n");
        scanf("%d %d", &n, &m);


        int a1[n], a2[m], i;
        printf("Enter the elements of first array: ");
        for (i = 0; i< n; i++)
        {
                scanf("%d",&a1[i]);
        }
```

```
	printf("Enter the elements of second array: ");
	for (i = 0; i< m; i++)
	{
		scanf("%d",&a2[i]);
	}

	if( isEqual( a1, a2,n,m) == 0)
	{
		printf("Arrays are NOT eqaul.");
	}
	else("Arrays are same.");
	return 0;
}
```

//H.4

```
#include <stdio.h>
#include <stdlib.h>

void makeDaigonalZero(int mat[5][5]);

int main()
{
    int mat[5][5],i,j, n;

    printf("Enter the order N of the matrix : "); // taking order of N*N
    matrix scanf("%d", &n);

    printf("Enter the elements of a matrix of order %d : \n", n);
    for(i=0;i<n;i++) // scanning for elements of matrix {
    for(j=0;j<n;j++)
      {
        scanf("%d",&mat[i][j]);
      }
    }

    printf("\n\n The original matrix is: \n");
```

```
    for(i=0; i < n; i++)
    {
        for(j=0;j<n;j++)
        {
      printf("%d\t",mat[i][j]);
        }
        printf("\n");
    }

    makeDaigonalZero(mat);
    printf("The matrix after making diagonals elements equal to 0 :
    \n")
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
      printf("%d\t",mat[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```

```
void makeDaigonalZero()
{
        int i, j, n;
        for(i=0;i<n;i++)
        { for(j=0;j<n;j++)
                {
                        if(i==j || (i+j+1) ==
                          n) mat[i][j] = '0';
                }
                printf("\n");
        }
}
```

//H.5

```
#include <stdio.h>
#include <stdlib.h>

void doSort (int a[], int n);
```

```
int main()
{
	int [10], n, i, e, j;
	printf("Enter the value of N\n");
	scanf("%d", &n);

	printf("Enter the numbers: ");
	scanf("%d", &a[i]);
	doSort(a);
	printf("The number arranged in ascending order are given below:
	\n");
	for(i=0; i<n; i++)
	{
		printf("%d\n", a[i]);
	}
	return 0;
}

void doSort (int a[], int n)
{
	int i, j;
	for(i = 0; i < n; ++i)
```

```
        {
            for(j+i; j < n; ++j)
            {
                if([j] > a[j+1])
                {
                    int e = a[j];
                    a[j] = a[j+1];
                    a[j+1] = e;
                }
            }
        }
}
```