ព្រះរាជាណាចក្រកម្ពុជា

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Institute of technology of Cambodia

Department of Information and communication Engineering

The lesson taking about function and structure.

TP9-Function and Structure

TP: Algorithm and Programming

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Contents

Problem1:

Write a function to check whether a number given as a parameter is an even or odd number. This function return a boolean values. Create your program to get n from user then call this created function in main to test.

bool checkEvenOdd(int n);

a

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```c
#include<stdio.h>
#include<stdbool.h>
bool checkEvenodd(int num)
{
    if(num%2==0)
    {
        return true;
    }
    else
    {
        return false;
    }

    return num;
}
main()
{
    while(1>0)
    {

    int num;
    printf("\n\tEnter of number: ");
    scanf("%d",&num);

    if(num%2==0)
    {
        printf("\n\tNumber %d is even.\n",num);
    }
    else
    {
        printf("\n\tNumber %d is odd.\n",num);
    }
    }
}
```

"C:\Fuction array\TD9 Problem1 VENTHON,e20191250.exe"

```
Enter of number: 55

Number 55 is odd.

Enter of number: 80

Number 80 is even.

Enter of number: 888

Number 888 is even.

Enter of number: 999

Number 999 is odd.

Enter of number:
```

Problem2:

Write a function that computes a sum of numbers in an array, where the array is passed to function as parameter. Initialize an array with your preferred size being greater than 10 and data to fill in array. Next call your function to compute sum and display the result.

int sumDataInArray(int a[]);

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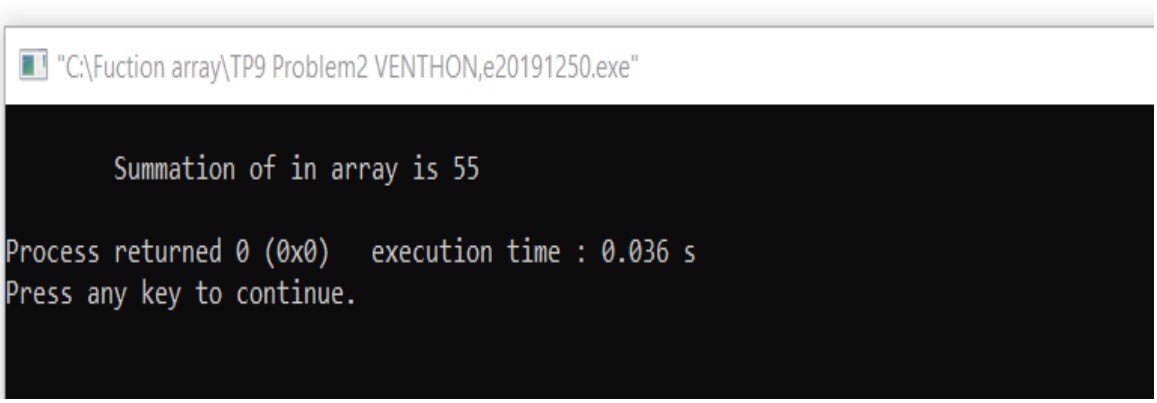
```c
#include<stdio.h>
int sumDeltaInArray(int a[],int n)
{
    int sum=0;
    for(int i=0; i<n; i++)
    {
        sum=sum+a[i];
    }
    return sum;
}
main()
{
    int a[]={1, 2, 3, 4, 5, 6, 7, 8, 9, 10};
    int n=sizeof(a)/sizeof(a[0]);
    printf(" \n\tSummation of in array is %d \n",sumDeltaInArray(a,n));
}
```



Problem3:

Write a function to compute
(1! + 2! + 3! + ... + n!)/(1+2+3+...+n). Create your program to get n from user then call this created function in main.
int computeSeries(int n);

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```c
#include<stdio.h>
float computeseries(int n)
{
    float result=1;
    for(int k=1; k<=n; k++)
    {
        result=result+k;
    }
    return result;
}
float sumseries(int n)
{
    float sum=0;
    for(int k=1; k<=n; k++)
    {
        sum=sum+computeseries(k)/k;
    }
    return sum;
}
main()
{
    float m;
    int n;
    printf("\n\tEnter of number: ");
    scanf("%d",&n);
    for(int k=1; k<=n; k++)
    {
        m=sumseries(k);
        printf("\t numbe k=%d sum series is: %.2f\n",k,m);
    }
}
```

"C:\Fuction array\TP9 Problem3 VENTHON,e20191250.exe"

```
        Enter of number: 5
         numbe k=1 sum series is: 2.00
         numbe k=2 sum series is: 4.00
         numbe k=3 sum series is: 6.33
         numbe k=4 sum series is: 9.08
         numbe k=5 sum series is: 12.28

Process returned 0 (0x0)   execution time : 6.331 s
Press any key to continue.
```

Problem4:

Define new data structures below
Date : consists of day, month and year.
Employee : consists of employee name, phone contact, Date of birth, salary, start working date and gender.

Create an array to store 7 employee information. Then create:
a) A function to ask a user to enter info and store in array
void enterData(Employee emp[]);

b) A function to display data in array
void displayData(Employee emp[]);

c) A function to display employee info that have highest salary
void displayEmployeeHighestSalary(Employee emp[]);

d) A function to return the lowest salary among all employees.
float findLowestSalary(Employee emp[];

Start here | TP9 Bonnus venthon,e20191250.c | TP9 Problem3 VENTHON,e20191250.c | TP9 Problem VENTHON,e20191250.c

```c
#include<stdio.h>
struct date{
    int day;
    int month;
    int year;
};
struct employee{
    char name[20];
    char phoneNum[10];
    struct date DoB;
    float salary;
    struct date stWorkDate;
    char gender;
};
void input(struct employee em[], int n){
    for(int i=0; i<n; i++){
        printf("Enter employee name: ");
        scanf("%s", &em[i].name);
        printf("Enter employee phone number: ");
        scanf("%s", &em[i].phoneNum);
        printf("Enter employee date of birth (dd mm yy): ");
        scanf("%d %d %d", &em[i].DoB.day, &em[i].DoB.month, &em[i].DoB.year);
        printf("Enter employee salary: ");
        scanf("%f", &em[i].salary);
        printf("Enter employee start working date: ");
        scanf("%d %d %d", &em[i].stWorkDate.day, &em[i].stWorkDate.month, &em[i].stWorkDate.year);
        printf("Enter employee gender: ");
        scanf("%c", &em[i].gender);
        scanf("%c", &em[i].gender);
        printf("\n\n");
    }
}
void output(struct employee em[], int n){
    printf("Name\t\tGender\t\tPhone Number\t\tDate of Birth\t\tSalary\t\tStart Working date\n\n");
    for(int i=0; i<n; i++){
        printf("%s\t\t%c\t\t%s\t\t%d %d %d\t\t%.2f\t\t%d %d %d\n", em[i].name, em[i].gender, em[i].phoneNum, em[i].DoB.day, em[i
```

Start here | TP9 Bonnus venthon,e20191250.c | TP9 Problem3 VENTHON,e20191250.c | TP9 Problem VENTHON,e20191250.c

```c
        scanf("%c", &em[i].gender);
        printf("\n\n");
    }
}
void output(struct employee em[], int n){
    printf("Name\t\tGender\t\tPhone Number\t\tDate of Birth\t\tSalary\t\tStart Working date\n\n");
    for(int i=0; i<n; i++){
        printf("%s\t\t%c\t\t%s\t\t%d %d %d\t\t%.2f\t\t%d %d %d\n", em[i].name, em[i].gender, em[i].phoneNum, em[i].DoB.day, em[i].DoB.month, em[i].DoB.year, em[i].salary, em[i].stWorkDate.day, em[i].stWorkDate.month, em[i].stWorkDate.year);
    }
}
void displayEmployeeHighestSalary(struct employee em[], int n){
    float max=em[0].salary;
    for(int i=0; i<n; i++){
        if(max<em[i].salary){
            max=em[i].salary;
        }
    }
    printf("Name\t\tGender\t\tPhone Number\t\tDate of Birth\t\tSalary\t\tStart Working date\n\n");
    for(int i=0; i<n; i++){
        if(max==em[i].salary){
            printf("%s\t\t%c\t\t%s\t\t%d %d %d\t\t%.2f\t\t%d %d %d\n", em[i].name, em[i].gender, em[i].phoneNum, em[i].DoB.day, em[i].DoB.month, em[i].DoB.year, em[i].salary, em[i].stWorkDate.day, em[i].stWorkDate.month, em[i].stWorkDate.year);
        }
    }

}
float findLowestSalary(struct employee em[], int n){
    float min=em[0].salary;
    for(int i=0; i<n; i++){
        if(min>em[i].salary){
            min=em[i].salary;
        }
    }
    return min;
}
main(){
    struct employee em[7];
    input(em, 4);
    printf("All employees\n");
    output(em, 4);
    printf("\n\nHighest salary employee\n");
    displayEmployeeHighestSalary(em, 4);

    float lowestsalary = findLowestSalary(em, 4);
    printf("\nThe lowest salary is %.2f", lowestsalary);
}
```

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```c
#include<stdio.h>

float findTax(char name[], float salary, char gender){
    float tax;
    if (gender=='F' || gender=='f')
    {
        if (salary<300)
        {
            tax=0.05*salary;
        }
        else if (salary>=300 && salary<=500)
        {
            tax=0.075*salary;
        }
        else if(salary>500)
        {
            tax=0.1*salary;
        }
    }
    if (gender=='M' || gender=='m'){
        if (salary<300)
        {
            tax=0.06*salary;
        }
        else if (salary>=300 && salary<=500)
        {
            tax=0.085*salary;
        }
        else if(salary>500)
        {
```

"C:\Fuction array\TP9 Problem5 VENTHON,e20191250.exe"

```
        Input name: Vibol

        Input salary: 500

        Input gender(M/F): M
Hello! Vibol, the amount of tax that you need to pay is 42.50


        Input name: Sreylin

        Input salary: 280

        Input gender(M/F): F
Hello! Sreylin, the amount of tax that you need to pay is 14.00


        Input name:
```

Problem5:

Write a function to compute how much tax a person should pay. This function takes user name, salary, and gender as parameters. Following rules are used to find tax:
-Female person with salary less than 300$, pay tax 5%.
-Female person with salary between 300 and 500, pay tax 7.5%.
-Female person with salary more than 500$, pay tax 10%.
-Male person with salary less than 300$, pay tax 6%.
-Male person with salary between 300 and 500, pay tax 8.5%.
-Male person with salary more than 500$, pay tax 12%.

This function compute tax and return values.
float findTax(char name[], float salary, char sex);

TP9 Problem5 VENTHON,e20191250.c

```c
#include<stdio.h>

float findTax(char name[], float salary, char gender){
    float tax;
    if (gender=='F' || gender=='f')
    {
        if (salary<300)
        {
            tax=0.05*salary;
        }
        else if (salary>=300 && salary<=500)
        {
            tax=0.075*salary;
        }
        else if(salary>500)
        {
            tax=0.1*salary;
        }
    }
    if (gender=='M' || gender=='m'){
        if (salary<300)
        {
            tax=0.06*salary;
        }
        else if (salary>=300 && salary<=500)
        {
            tax=0.085*salary;
        }
        else if(salary>500)
        {
```

tart here | TP9 Problem5 VENTHON,e20191250.c

```
23              tax=0.06*salary;
24          }
25          else if (salary>=300 && salary<=500)
26          {
27              tax=0.085*salary;
28          }
29          else if(salary>500)
30          {
31              tax=0.12*salary;
32          }
33      }
34      return tax;
35
36  }
37
38  main(){
39
40       while(1){
41      char name[30];
42      float salary;
43      char gender;
44      printf("\n\tInput name: ");scanf("%s",&name);
45      printf("\n\tInput salary: ");scanf("%f",&salary);
46      printf("\n\tInput gender(M/F): ");scanf(" %c",&gender);
47
48      printf("Hello! %s, the amount of tax that you need to pay is %.2f\n\n",name,findTax(name,salary,gender));
49  }
50  }
51
```

art here X TP9 Problem5 VENTHON,e20191250.c X

```c
#include<stdio.h>

float findTax(char name[], float salary, char gender){
    float tax;
    if (gender=='F' || gender=='f')
    {
        if (salary<300)
        {
            tax=0.05*salary;
        }
        else if (salary>=300 && salary<=500)
        {
            tax=0.075*salary;
        }
        else if(salary>500)
        {
            tax=0.1*salary;
        }
    }
    if (gender=='M' || gender=='m'){
        if (salary<300)
        {
            tax=0.06*salary;
        }
        else if (salary>=300 && salary<=500)
        {
            tax=0.085*salary;
        }
        else if(salary>500)
        {
```

"C:\Fuction array\TP9 Problem5 VENTHON,e20191250.exe"

```
       Input name: Vibol

       Input salary: 500

       Input gender(M/F): M
Hello! Vibol, the amount of tax that you need to pay is 42.50


       Input name: Sreylin

       Input salary: 280

       Input gender(M/F): F
Hello! Sreylin, the amount of tax that you need to pay is 14.00


       Input name:
```