CHANDIGARH UNIVERSITY
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CLASS AND GROUP – 23 "B"

SEMESTER – 1st Semester

EXPERIMENT NUMBER: Practical 5.1

TOPIC OF THE EXPERIMENT :

There are n persons each have 25 paise coins, 50 paise coins and Rs.1 coins in the ratio p:q:r but have different amounts stored in a single list. Find and print no. of 25 paise coins, 50 paise coins and Rs.1 coins each person have.

AIM OF THE

EXPERIMENT –Learn

how to use looping

constructs using C.

FLOWCHART/ ALGORITHM :

(i)Start the program.
(ii) Declaration of variables in integer and float datatype.
(iii) Print the message.
(iv) Accept the input of total number of persons from the user.
(v) For loop,if else and goto statements are used.
(vi) Use the formula :
r*(amount[i]/amount[0]),q*(amount[i]/amount[0]),p*(amount[i]/amount[0]).
(vii) Print the output.
(vii) End the program by returning an integer value.

PROGRAM CODE

```
//creating a header file
#include<stdio.h>
//function which returns integer value
int main()
{
//declaration of variables in integer datatype
int n,i;
//print the message
printf("Enter no of persons : ");
//accept the input of no of persons from the user
scanf("%d",&n);
//declaration of variables in float datatype
float amount[n],p,q,r;
//print the message
printf("Enter amount of each person:\n");
//loop to enter the number of persons
for(i=0;i<n;i++)
{
//print the message
printf("%d : ",i+1);
//accept the input of amount from the user
scanf("%f",&amount[i]);
}
//loop to enter the amounts
for(r=1;r<=amount[0];r++)
for(q=1;q<=amount[0];q++)
for(p=1;p<=amount[0];p++)
//check the condition
if((r*1+q*0.50+p*0.25)==amount[0])
//jump to next statement
goto A;
A:
//print the message
printf("Person 1 Rs 50 paise 25 paise\n");
```

```
// loop to enter  the no of  of person
for(int i=0;i<n;i++)
{
//print the amount of each person
printf("%d %f %f %f
\n",i+1,r*(amount[i]/amount[0]),q*(amount[i]/amount[0]),p*(amount[i]/
amount[0]));
}
//return an integer value
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

(Kindly jot down the compile time errors encountered)

No Error.

PROGRAMS' EXPLANATION (in brief)

In this program we have to find the number of coin of 25 paise coins , 50 paise coin
And Rs 1 coin for it we have to enter the total amount and the ration of enter the coins after that program find the number of coin

OUTPUT

```
Enter no of persons : 3
Enter amount of each person:
1 : 20
2 : 40
3 : 60
Person 1 Rs 50 paise 25 paise
1 5.000000 20.000000 20.000000
2 10.000000 40.000000 40.000000
3 15.000000 60.000000 60.000000
```

TOPIC OF THE EXPERIMENT :

Write a program to perform various matrix operations Addition, Subtraction, Multiplication, Transpose using switch-case statement.

AIM OF THE EXPERIMENT :

Learn how to use looping

constructs using C.

FLOWCHART / ALGORITHM :

(i)Start the program

(ii) Specify the data type and variable and define the array required for the program

(iii) Make 4 cases using switch case

Make cases and use following concepts

- addition a[i][j]+=b[i][j];
- subtraction a[i][j]-=b[i][j]
- multiplication c[i][j] = a[i][j]
- and transpose [j][i] = a[i][j];

(iv) Print the output

(v)End the program by returning an integer value

PROGRAM CODE :

```
//creating a header file
#include<stdio.h>
//function which returns integer value
int main()
{
//declaration of values in integer datatype
int i, choice,r1,c1,r2,c2;
//print the message
printf("Enter row size of 1st matrix:");
```

```
//accept the input from the user
scanf("%d",&r1);
//print the message
printf("Enter column size of 1st matrix:");
//accept the input from the user
scanf("%d",&c1);
//print the message
printf("Enter row and size of 2nd matrix:");
//accept the input from the user
scanf("%d",&r2);
//print the message
printf("Enter column size of 2nd matrix:");
//accept the input from the user
scanf("%d",&c2);
//declaration of variables in integer datatype
int a[r1][c1],b[r2][c2],c[r1][c2];
//print the message
printf("Enter 1st matrix element:");
//loop to enter the number of rows and columns
for(int i=0;i<r1;i++)
for(int j=0;j<c1;j++)
//accept the input from the user
scanf("%d",&a[i][j]);
//print the message
printf("Enter 2nd matrix element:");
//loop to enter the number of rows and columns
for(int i=0;i<r2;i++)
for(int j=0;j<c2;j++)
//accept the input from the user
scanf("%d",&b[i][j]);
//print the message
printf("\n1.Addition\n2.Subtraction\n3.Multiplication\n4.Transpose\nYour
choice:");
```

```
//accept the input from the user
scanf("%d",&choice);
//switch case
switch(choice)
{
case 1:
//check the condition
if(r1!=r2||c1!=c2)
{
//print the message
printf("Addition not possible");
break;
}
//loop to enter the number of rows and columns
for(int i=0;i<r1;i++)
for(int j=0;j<c1;j++)
//addition of matrix
a[i][j]+=b[i][j];
//print the message
printf("Addition of two matrix is:");
//loop to enter the number of rows and columns
for(int i=0;i<r1;i++)
{
for(int j=0;j<c1;j++)
//print the message
printf("%d",a[i][j]);
printf("\n");
}
break;
case 2:
//check the condition
if(r1!=r2||c1!=c2)
{
```

```
//print the message
printf("Subtraction not possible");
break;
}
//loop to enter the number of rows and columns
for(int i=0;i<r1;i++)
for(int j=0;j<c1;j++)
//subtraction of matrix
a[i][j]-=b[i][j];
//print the message
printf("Subtraction of two matrix is:");
//loop to enter the number of rows and columns
for(int i=0;i<r1;i++)
{
for(int j=0;j<c1;j++)
//print the message
printf("%d",a[i][j]);
printf("\n");
}
break;
case 3:
//check the condition
if(c1!=r2)
{
//print the message
printf("Multiplication not possible");
break;
}
//loop to enter the number of rows and columns
for(int i=0;i<r1;i++)
{
for(int j=0;j<c2;j++)
{
```

```
c[i][j]=0;
for(int k=0;k<c1;k++)
c[i][j]+=a[i][k]*b[k][j];
}
}
printf("Multiplication of two matrix is:");
for(int i=0;i<r1;i++)
{
for(int j=0;j<c2;j++)
printf("%d",c[i][j]);
printf("\n");
}
break;
case 4:
printf("Transpose of 1st matrix is:");
for(int i=0;i<c1;i++)
{
for(int j=0;j<r1;j++)
printf("%d",a[j][i]);
printf("\n");
}
printf("Transpose of 2nd matrix is:");
for(int i=0;i<c2;i++)
{
for(int j=0;j<r2;j++)
printf("%d",b[j][i]);
printf("\n");
}
break;
default:
printf("Invalid input! Please try again");
break;
}
```

```
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

(Kindly jot down the compile time errors encountered)

No Error.

PROGRAMS' EXPLANATION (in brief)

In this program we have to perform the matrix operations Addition ,subtraction ,multiplication and transpose of a matrix for it enter the all element of matrix one and the all the element of second matrix after that enter the operation which you want then the program find the new matrix

OUTPUT

```
Enter row size of 1st matrix:3
Enter column size of 1st matrix:3
Enter row and size of 2nd matrix:3
Enter column size of 2nd matrix:3
Enter 1st matrix element:1
2
3
4
5
6
7
8
9
Enter 2nd matrix element:10
11
12
13
14
15
16
17
18

1.Addition
2.Subtraction
3.Multiplication
4.Transpose
Yourchoice:4
Transpose of 1st matrix is:147
258
369
Transpose of 2nd matrix is:101316
111417
121518
```

TOPIC OF THE EXPERIMENT :

In a list there is cost price of n goods. On the most expensive thing there is a loss of x% and on the cheapest thing there is a gain of y% and on rest of things there is a gain of p%. Find loss or gain on whole transaction in Rupees.

AIM OF THE EXPERIMENT :

Learn how to use looping

constructs using C.

FLOWCHART / ALGORITHM :

Start the program

- Specify the data types and variables
- Use the assignment operator to assign values to the cost price of items
- Use the loops to print the desired output

PROGRAM CODE :

```
#include <stdio.h>
int main()
{
int n;
printf("Enter no of goods: ");
scanf("%d", &n);
float cost[n],x,y,p,total=0;
printf("Enter cost of %d goods\n",n);
for(int i=0;i<n;i++)
{
printf("%d : ",i+1);
scanf("%f",&cost[i]);
}
for(int i=0;i<n;i++)
{
for(int j=0;j<n;j++)
{
if(cost[j]<cost[i])
{
cost[j]+=cost[i];
cost[i]=cost[j]-cost[i];
cost[j]-=cost[i];
}
}
}
```

```
printf("Loss on most expensive thing : ");
scanf("%f",&x);
printf("Gain on cheapest thing : ");
scanf("%f",&y);
if(n>2)
{
printf("Gain on rest of the thing : ");
scanf("%f",&p);
}
for(int i=0;i<n;i++)
{
if(cost[n-1]==cost[i])
total+=(y*cost[i])/100;
else if(cost[0]==cost[i])
total-=(x*cost[i])/100;
else
total+=(p*cost[i])/100;
}
if(total<0)
printf("Rs. %f loss on goods",total*-1);
else if(total>0)
printf("Rs. %f gain on goods",total);
else
printf("Neither gain nor loss on goods");
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

(Kindly jot down the compile time errors encountered)

No Error.

PROGRAMS' EXPLANATION (in brief)

In this program we have to find loss or gain on whole transaction in Rupees.

OUTPUT

```
Enter no of goods: 5
Enter cost of 5 goods
1 : 20
2 : 40
3 : 60
4 : 80
5 : 100
Loss on most expensive thing : 50
Gain on cheapest thing : 30
Gain on rest of the thing : 20
Rs. 8.000000 loss on goods
```

TOPIC OF THE EXPERIMENT :

Suppose you have a device which when fed with the input numbers, rearranges them in a particular order using some rules. The following is a step for the given input of numbers. Input :- 1 2 3 4 9 10 8 6 Step I :- 4 1 2 3 9 10 8 6 Step II :- 9 4 1 2 3 10 8 6 Step III :- 10 9 4 1 2 3 8 6 Step IV :- 8 10 9 4 1 2 3 6 Step V:- 6 8 10 9 4 1 2 3 In first step you select 5th last element and places it as first and append rest of the list, in second step you select 4th last element and place it as first element and append the remaining list and so.Take the input and specified by 5^{th} step.

AIM OF THE EXPERIMENT :

Learn how to use looping

constructs using C.

FLOWCHART / ALGORITHM :

Start

- Specify the data types and

• Use the concept of linear search to print the desired output • Use loops and assign the values to the arrays as required .

• Print the output after rearranging

• Stop

PROGRAM CODE :

```
#include <stdio.h>
int main()
{
int n;
printf("Enter size of array : ");
scanf("%d",&n);
int a[n],temp;
printf("Enter %d numbers",n);
for(int i=0;i<n;i++)
{
printf("\n%d : ",i+1);
scanf("%d",&a[i]);
}
for(int i=n-5;i<n;i++)
{
for(int j=i;j>0;j--)
{
temp=a[j];
a[j]=a[j-1];
a[j-1]=temp;
}
}
printf("Modified series");
for(int i=0;i<n;i++)
printf("%d ",a[i]);
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

(Kindly jot down the compile time errors encountered)

No Error.

PROGRAMS' EXPLANATION (in brief)

In this program we have to repeating of the number in a given number array for this enter the number and program change the number line last number come in first number and in second time program also change the position of the number in the number line the program do this step five time and the change the potion of the number and print the number in every step print

OUTPUT

TOPIC OF THE EXPERIMENT :

N students of your class ride their vehicles to reach University, the distances from their homes and time taken to reach are recorded. University issued the guidelines mentioned speed limit of m Kmph for safe driving. On the basis of your class data you have to print whether your class is following university guidelines or not

AIM OF THE EXPERIMENT :

Learn how to use looping

constructs using C.

FLOWCHART / ALGORITHM :

start

- input the variables
- initialize the count to be 0
- mention the details provided by university
- take values from the students
- use for loop to run the condition for the number of students present in class and find out their details.
- use the formula speed = distance/ time to fint the speed of each student
- then run for loop to find the number of students following the guideline
- if the count is equal to total number of student print that guidelines are followed
- if the student do not follow the guidelines print the guideline is not followed
- stop

PROGRAM CODE :

```
#include<stdio.h>
void main()
{
   int a,e,i=1,f;
   printf("Enter the speed limit : ");
   scanf("%d",&e);
   printf("Enter the number of student who use the vehicle : ");
   scanf("%d",&a);
   float b[a],c[a],d[a];
   printf("Enter the distance from home to university of each student : ");
   for(i=1;i<=a;i++)
   {
   scanf("%f",&b[a]);
```

```
    }
    printf("Enter the time taken from home to university : ");
//loop to enter the number of students who use the vehicle
    for(i=1;i<=a;i++)
    {
        scanf("%f",&c[a]);
    }
    for(i=1;i<=a;i++)
    {
//calculate the distance
        d[a]=b[a]/c[a];
    }
    for(i=1;i<=a;i++)
    {
//check the condition using if else statement and print the message
        if(e<=d[a])
            f+=1;
    }
    if(f<=a/2)
    {
        printf(" My class is not following university guidelines");
    }
    else
    {
        printf(" My class is following university guidelines ");
    }
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

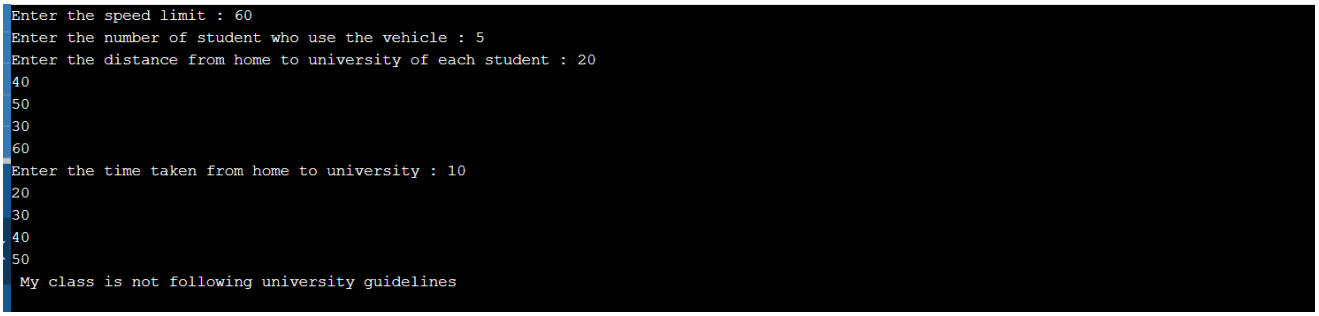
(Kindly jot down the compile time errors encountered)

No Error.

PROGRAMS' EXPLANATION (in brief)

In this program we have to find that your class is follow the university guidelines or not of the speed of given for this we have to enter the number of student which use the vehicles. Distance from home to university and also enter the time taken by the student to reach the destiny after that program find the speed of all student after that find who many student follow the speed limit the decide that your class follow the guidelines or not

OUTPUT



LEARNING OUTCOMES

- Identify situations where computational methods would be useful.
- Approach the programming tasks using techniques learnt and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task.

EVALUATION COLUMN (To be filled by concerned faculty only)

Sr. No.	Parameters	Maximum Marks	Marks Obtained
1.	Worksheet Completion including writing learning objective/ Outcome	10	
2.	Post Lab Quiz Result	5	
3.	Student engagement in Simulation/ Performance/ Pre Lab Questions	5	
4.	Total Marks	20	