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CLASS AND GROUP: 23B
SEMESTER: 1st

EXPERIMENT NUMBER : Practical 2.1

TOPIC OF THE EXPERIMENT :

Ram,Mohan and Sohan took loan of x,y and z on rate of interest r% , p% and q% for time t1,t2 and t3 years respectively. Calculate simple interest they will pay and who will pay the most using ternary operator.

AIM OF THE EXPERIMENT:

Learn how to operators and apply decision making in C using IF - ELSE statements, how to use bitwise, conditional, arithmetic operators.

FLOWCHART / ALGORITHM:

1. Start the program.
2. Declaration of variable x,y,z in integer datatype.
3. Declaration of variable p,q,r in float datatype.
4. Declaration of variable t1,t2,t3 in float datatype.
5. Declaration of variable s1,s2,s3 in float datatype.
6. Print "Enter Ram's amount of loan rate and time:".
7. Accept the input of Ram's amount of loan,rate and time from the user.
8. Print "Enter Mohan's amount of loan rate and time:".

9. Accept the input of Mohan's amount of loan rate and time from the user.
10. Print "Enter Sohan's amount of loan rate and time :".
11. Accept the input of Sohan's amount of loan rate and time from the user.
12. Calculate the interest paid by Ram, Mohan and Sohan by using the formula : $(P * R * T) / 100$.
13. Print "Ram's pay interest =" and the value of interest paid by Ram.
14. Print "Mohan's pay interest =" and the value of interest paid by Mohan.
15. Print "Sohan's pay interest =" and the value of interest paid by Sohan.
16. Print "Maximum interest paid by:".
17. Check who would paid maximum interest using ternary operator.
18. End the program by returning an integer.

PROGRAM CODE:

```
//creating a header file
#include<stdio.h>
//function which returns integer value
int main( )
{
// declaration of amount of loan in integer data type
int x,y,z;
//declaration of rate in float datatype
float p,q,r;
//declaration of time in float datatype
float t1,t2,t3;
```

```

//declaration of simple interest in float datatype.
float s1,s2,s3;
//print the message
printf("\nEnter Ram's amount of loan rate and time:");
//accept the input of loan amount rate and time from user
scanf("%d%f%f",&x,&p,&t1);
//print the message
printf("\nEnter Mohan's amount of loan rate and time:");
//accept the input of loan amount rate and time from user
scanf("%d%f%f",&y,&q,&t2);
//print the message
printf("\nEnter Sohan's amount of loan rate and time:");
//accept the input of loan amount rate and time from user
scanf("%d%f%f",&z,&r,&t3);
//calculate the interest paid by Ram
s1=(x*p*t1)/100;
//calculate the interest paid by Mohan
s2=(y*q*t2)/100;
//calculate the interest paid by Sohan
s3=(z*r*t3)/100;
//print the message and value of interest paid by Ram
printf("Ram's pay interest=%f\n",s1);
//print the message and value of interest paid by Mohan
printf("Mohan's pay interest=%f\n",s2);
//print the message and value of interest paid by Sohan
printf("Sohan's pay interest=%f\n",s3);
//print the message
printf("Maximum interest paid by :");
//print the message
printf("Maximum interest paid by :");

```

```
//check who would paid maximum interest using ternary
operator
s1>s2?(s1>s3?printf("Ram"):printf("Sohan")):(s2>s3?printf("
Mohan"):printf("Sohan"));
//returning an integer value
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION -

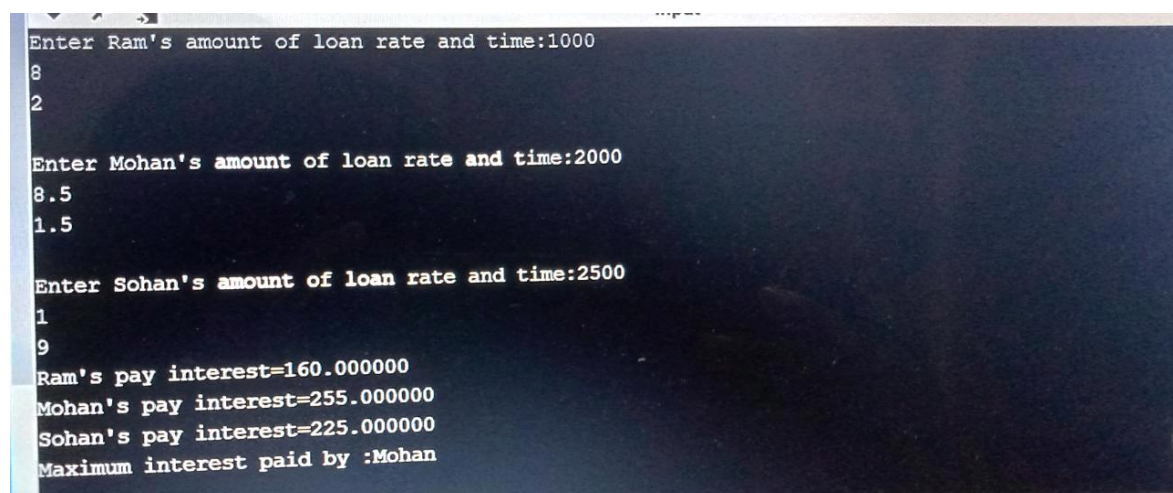
(Kindly jot down the compile time errors encountered)

No Errors.

PROGRAM'S EXPLANATION (In Brief)

In this program we have to calculate the interest paid by Ram, Mohan and Sohan and also check who would paid the maximum interest by using ternary operator. Simple interest is calculated by using the formula: $(P * R * T) / 100$.

OUTPUT:



```
Enter Ram's amount of loan rate and time:1000
8
2
Enter Mohan's amount of loan rate and time:2000
8.5
1.5
Enter Sohan's amount of loan rate and time:2500
1
9
Ram's pay interest=160.000000
Mohan's pay interest=255.000000
Sohan's pay interest=225.000000
Maximum interest paid by :Mohan
```

EXPERIMENT NUMBER- Practical 2.2

TOPIC OF EXPERIMENT:

Write a program to input two integers from user by using single scanf. Compute and display the value for a&b,a|b,a^b.

AIM OF THE EXPERIMENT:

Learn how to operators and apply decision making in C using IF - ELSE statements, how to use bitwise, conditional, arithmetic operators.

FLOWCHART / ALGORITHM:

1. Start the program.
2. Declaration of variables a and b in integer datatype.
3. Print "Enter the values of a and b".
4. Accept the input of a and b from the user.
5. Print "Output of a&b" and its value.
6. Print "Output of a|b" and its value.
7. Print "Output of a^b" and its value.
8. End the program by returning an integer value.

PROGRAM CODE:

```
// creating a header file
#include <stdio.h>
//function which returns integer type value
int main()
{
//declaration of integer type variables
int a,b;
//print the message
```

```
printf("Enter the values of a and b");
//accept the input from the user
scanf("%d %d",&a, &b);
//print the output of a&b
printf("Output of a&b is %d", a&b);
//print the output of a|b
printf("\nOutput of a|b is %d", a|b);
//print the output of a^b
printf("\nOutput of a^b is %d", a^b);
//returning an integer value
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION:

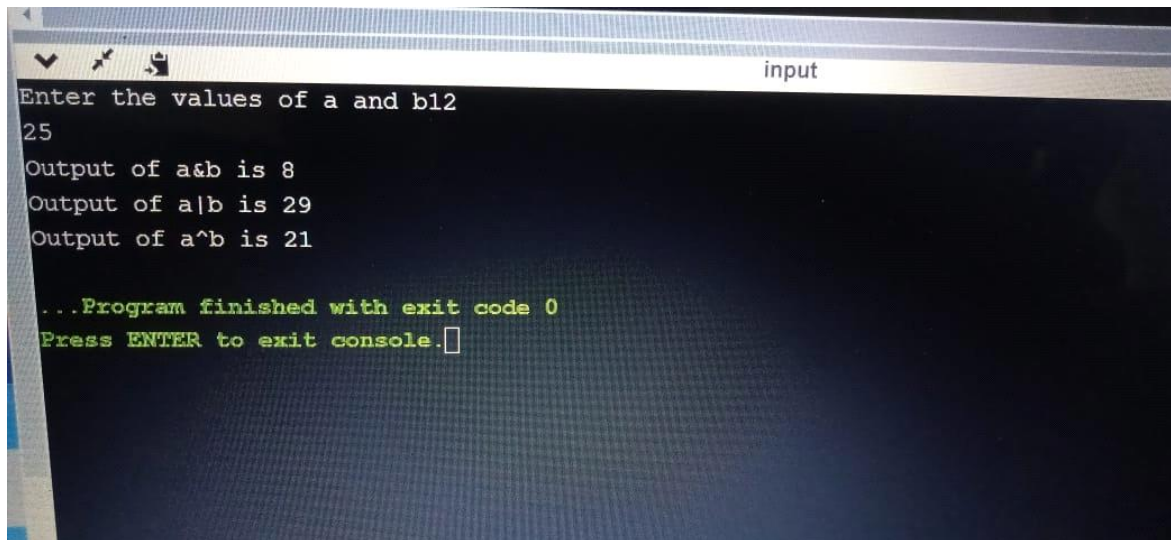
(Kindly jot down the compile time errors counted)

No Errors.

PROGRAM'S EXPLANATION (In Brief) -

In this program we have to take two integers from the user using single scanf and compute and display the value of a&b, a|b and a^b.

OUTPUT:



```
input
Enter the values of a and b12
25
Output of a&b is 8
Output of a|b is 29
Output of a^b is 21
...Program finished with exit code 0
Press ENTER to exit console.□
```

EXPERIMENT NUMBER - Practical 2.3

TOPIC OF THE EXPERIMENT -

Write a C program to find out year in which Mr. Kavi was born from the following information.

- a) Kavi is m years younger than his mother.
- b) Kavi's brother who born in year $y(1900 \leq y \leq 2019)$ is n years younger to his mother
- c) If Kavi's brother is reading in class r then On the basis of your common sense also predict
In which class Kavi is reading?

AIM OF THE EXPERIMENT-

Learn how to operators and apply decision making in C using IF - ELSE statements, how to use bitwise, conditional, arithmetic operators.

FLOWCHART / ALGORITHM:

1. Start the program.
2. Variables m,n,y,r are declared in integer datatype.
3. Print "Enter the values of m, y(1900<=y<=2019), n, r(1<=r<=12):".
4. Accept the input of age of Kavi , his brother, his brother's year of birth, his brother's class from the user.
5. Variables y_o_b and class are declared in integer datatype.
6. Calculate the year of birth of Kavi using the formula : $y+m-n$.
7. Print "Mr. Kavi's year of birth is " and his year of birth.
8. Predict the class of Kavi's brother using if statement.
9. Class of Mr Kavi can be predicted by using the formula: $r+n-m$.
10. If the value of class is less than 1 then print "Mr. Kavi is in Pre Primary".
11. If the value of class is greater than 12 then print "Mr.Kavi is in college but class is not predicted."
12. Otherwise print "Mr. Kavi is in class" and the value of class.
13. If the condition satisfied then 0 will be returned and program is successfully executed.
14. Otherwise print "The value of r is outside the defined constraint."
15. End the program.

PROGRAM CODE:

```
//creating a header file
#include <stdio.h>
//function returns integer type value
int main()
```



```

{
//declaration of variables in integer datatype
int m, y, n, r;
//print the message
printf("Enter the values of m, y(1900<=y<=2019), n,
r(1<=r<=12): ");
//accept the input from the user
scanf("%d %d %d %d",&m,&y,&n,&r);
//declaration of integer type value
int y_o_b, class;
//calculate year of birth
y_o_b = y+m-n;
//print the year of birth of Kavi
printf("Mr. Kavi's Year of Birth is %d",y_o_b);
//checking the condition using if else statement and calculate
the value of class and print the message
if ( r <= 12 && r >= 1)
{
class = r+n-m;
if(class<1)
{
printf("\nMr. Kavi is in Pre Primary");
}
else if (class>12)
{
printf("\nMr. Kavi is in College but class cannot
be predicted.");
}
else
{
printf("\nMr. Kavi is in class %d", class);
}
return 0;
}

```

```
    }  
else  
{  
printf("\n\nThe Value of r is outside the defined  
        constraint!");  
}  
//return an integer value  
return 0;  
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION:

(Kindly jot down the compile time errors counted)

No Errors.

PROGRAM'S EXPLANATION (In Brief) -

In this program we have to find out the Mr. Kavi's year of birth and predict his class also. Year of birth of Mr.Kavi is calculated by using the formula : $y_o_b = y+m-n$. Class of Mr.Kavi is predicted by using the formula : $class = r+m-n$.

OUTPUT:

```
input
Enter the values of m, y(1900<=y<=2019), n, r(1<=r<=12): 23 2000 25 12
Mr. Kavi's Year of Birth is 1998
Mr. Kavi is in College but class cannot be predicted.

...Program finished with exit code 0
Press ENTER to exit console.
```

```
input
Enter the values of m, y(1900<=y<=2019), n, r(1<=r<=12): 25 2000 23 1
Mr. Kavi's Year of Birth is 2002
Mr. Kavi is in Pre Primary

...Program finished with exit code 0
Press ENTER to exit console.
```

```
input
Enter the values of m, y(1900<=y<=2019), n, r(1<=r<=12): 25 2013 23 3
Mr. Kavi's Year of Birth is 2015
Mr. Kavi is in class 1

...Program finished with exit code 0
Press ENTER to exit console.
```

EXPERIMENT NUMBER - Practical 2.4

TOPIC OF THE EXPERIMENT -

If last day of mth month of the year is Friday then find out nth day($1 \leq n \leq 31$) of the same month.

AIM OF THE EXPERIMENT-

Learn how to operators and apply decision making in C using IF - ELSE statements, how to use bitwise, conditional, arithmetic operators.

FLOWCHART / ALGORITHM :

1. Start the program.
2. Variables num , month are declared in integer datatype.
3. Print "Enter the day you want to find".
4. Accept the input of day from the user.
5. Print "Enter the month".
6. Accept the input of month from the user.
7. Checking the condition using if statement in case of month with 31 days.
8. Check the day and print the message.
9. Checking the condition using if statement in case of month with 30 days.
10. Check the day and print the message.
11. Checking the condition using if statement in case of february month.
12. Check the day and print the message.
13. End the program by returning an integer value.

PROGRAM CODE :

```
//creating a header file
```

```
#include<stdio.h>
//function which returns integer type value.
int main()
{
//declaration of variables in integer datatype
int num, month;
//print the message
printf("Enter the day you want to find");
//accept the input of day from the user
scanf("%d", &num);
//print the message
printf("Enter the month");
//accept the input of month from the user
scanf("%d",&month);
//checking the condition in case of month with 31 days using
if statement and print the message
if(month==1||month==3||month==5||month==7||month==8||
month==10||month==12)
{
if((31-num)%7==0)
printf("The day is friday");
if((31-num)%7==1)
printf("The day is Thursday");
if((31-num)%7==2)
printf("The day is Wednesday");
if((31-num)%7==3)
printf("The day is Tuesday");
if((31-num)%7==4)
printf("The day is Monday");
if((31-num)%7==5)
printf("The day is Sunday");
if((31-num)%7==6)
printf("The day is Saturday");
```

```

}
//checking the condition in case of month with 30 days using
if statement and print the message
if(month==4||month==6||month==9||month==11)
{
if((30-num)%7==0)
printf("The day is friday");
if((30-num)%7==1)
printf("The day is Thursday");
if((30-num)%7==2)
printf("The day is Wednesday");
if((30-num)%7==3)
printf("The day is Tuesday");
if((30-num)%7==4)
printf("The day is Monday");
if((30-num)%7==5)
printf("The day is Sunday");
printf("The day is Saturday");
}
//checking the condition in case of february month and print
the message
if(month==2)
{
if((28-num)%7==0)
printf("The day is friday");
if((28-num)%7==1)
printf("The day is Thursday");
if((28-num)%7==2 )
printf("The day is Wednesday");
if((28-num)%7==3)
printf("The day is Tuesday");
if((28-num)%7==4)
printf("The day is Monday");
}

```

```
if((28-num)%7==5)
printf("The day is Sunday");
if((28-num)%7==6)
printf("The day is Saturday");
}
//returning an integer
return 0;
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION:

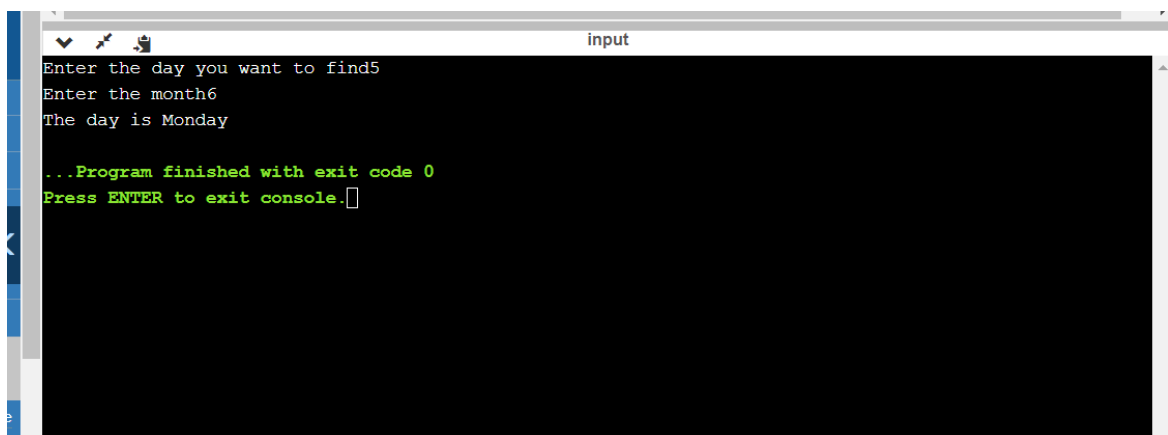
(Kindly jot down the compile time errors counted)

No Errors.

PROGRAM'S EXPLANATION (In Brief) -

In this program if last day of mth month of the year is Friday then find out nth day ($1 \leq n \leq 31$) of the same month by using the conditional statement.

OUTPUT:

A screenshot of a terminal window titled "input". The terminal shows the following text: "Enter the day you want to find5", "Enter the month6", "The day is Monday", "...Program finished with exit code 0", and "Press ENTER to exit console." with a cursor. The terminal has a dark background and a light border.

```
input
Enter the day you want to find5
Enter the month6
The day is Monday
...Program finished with exit code 0
Press ENTER to exit console.
```

EXPERIMENT NUMBER - Practical 2.5

TOPIC OF THE EXPERIMENT -

In a class of N students where girls and boys ratio is p:q Savita ranked rth from the top. If there are m ($m < r$) boys ahead of Savita, how many girls are after her rank ? Also find whether she is among top 10 students of the class or not ?

AIM OF THE EXPERIMENT-

Learn how to operators and apply decision making in C using IF - ELSE statements, how to use bitwise, conditional, arithmetic operators.

FLOWCHART / ALGORITHM :

1. Start the program.
2. Print "Taking class size as 80 and ratio of girls and boys in the class as 2:3".
3. Declaration of variables x,m,r in integer datatype.
4. Print "Enter rank of Savita:".
5. Accept the input of rank of Savita from the user.
6. Print "Enter value of no. of boys ahead Savita:".
7. Accept the input of number of boys from the user.
8. Check the condition using if statement.
9. Calculate the number of girls behind Savita using the formula : $x = m - r + 32$; // $x = m - r + (2 * 80 / 2 + 5)$.
10. Print "the number of girls behind Savita are:" and the number of girls.
11. Print the total number of students and number of boys using the formula : $m - r$.

12. End the program by returning an integer value.

PROGRAM CODE :

```
//creating a header file
#include <stdio.h>
//function returns integer value
int main()
{
//print the message
printf("Taking class size as 80 and ratio of girls and boys in
the class as 2:3\n");
//declarartion of variables in integer datatype
int x, m, r;
//print the message
printf("Enter rank of Savita:\n");
//accept the input of rank of Savita from the user
scanf("%d",&r);
//continue the execution
again:
//print the message
printf("Enter value of no. of boys ahead Savita: \n");
//accept the input of no.of boys from the user
scanf("%d",&m);
//checking the condition using if else statement and calculate
the number of girls behind Savita and no. of boys and print
the message
if(m<r)
{
x = m-r + 32;
printf("the number of girls behind Savita are: %d\n",x);
}
else
```

```
{  
printf("There can be %d students in total and no. of boys  
could only be: %d",r,m-r);  
//again continue the execution  
goto again;  
}  
//returning an integer  
return 0;  
}
```

ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION:

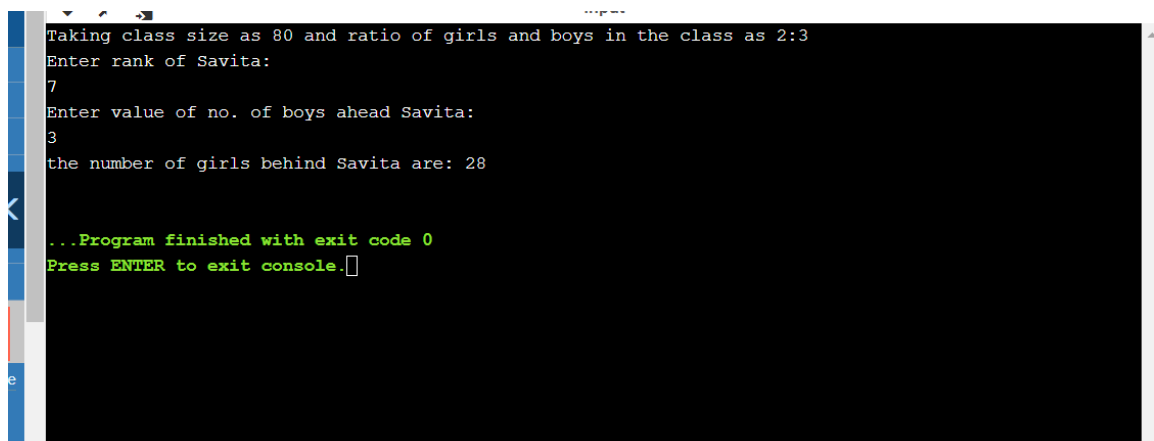
(Kindly jot down the compile time errors counted)

No Errors.

PROGRAM'S EXPLAINATION (In Brief) -

In this program we have to find the number of girls behind Savita and also check the position of the Savita whether she belongs to top 10 students of class or not. Calculate the number of girls behind Savita using the formula : $x = m - r + 32$.

OUTPUT -



```
Taking class size as 80 and ratio of girls and boys in the class as 2:3  
Enter rank of Savita:  
7  
Enter value of no. of boys ahead Savita:  
3  
the number of girls behind Savita are: 28  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```


LEARNING OUTCOMES

- | |
|---|
| <ul style="list-style-type: none">• Identify situations where computational methods would be useful. |
| <ul style="list-style-type: none">• Approach the programming tasks using techniques learnt and write pseudo-code. |

<ul style="list-style-type: none"> Choose the right data representation formats based on the requirements of the problem.
<ul style="list-style-type: none"> 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.	Student's performance while executing the program in Computer Lab	12	
2.	Completion of worksheet with learning outcomes and program's output along with cleanliness and discipline.	10	
3.	Clarification of theoretical concepts	8	
4.	Total Marks	30	
5.	Teacher's Signature (with date)		