

OBJECT ORIENTED PROGRAMMING LAB

**Operators, Conditional Statements, Loops, Functions,
Arrays, Pointers and Structures**



ASSIGNMENT # 01

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OOP LAB

1) Write a C++ program that will convert dollar to rupees (Dollar to Rupees Conversion Calculator).

```
#include<iostream>
using namespace std;
int main()
{
    int dollar;
    int convert_dollar;
    cout<<"please enter amount in dollar:"<<endl;
    cin>>dollar;
    convert_dollar=dollar*156;
    cout<<"amount in rupee is equal to :
"<<convert_dollar<<endl;
    return 0;
}
```

output:

```
please enter amount in dollar:
1234
amount in rupee is qual to : 192504
[1] + Done
```


2) Write a C++ program that will convert rupees to dollar (Rupees to Dollar Conversion Calculator).

Source code below:-

```
#include<iostream>
using namespace std;
int main()
{
    int rupee;
    int convert_rupee;
    cout<<"please enter amount in rupee:"<<endl;
    cin>>rupee;
    convert_rupee=rupee/156;
    cout<<"amount in rupee is equal to : 
"<<convert_rupee<<endl;
    return 0;
}
```

output2:

```
please enter amount in rupee:
250000
amount in rupee is qual to : 1602
[1] + Done
n-640ijcnp.zxb" 1>"/tmp/Microsoft-M
ianruGstajc program: /Documents
```


3) Write a C++ program that will convert centigrade to Fahrenheit.

Source code :-

```
#include<iostream>
using namespace std;
int main()
{
int celcius;
int convert_to_ferenhite;
cout<<"Enter tempreture in celcius"<<endl;
cin>>celcius;
convert_to_ferenhite=(celcius*9/5)+32;
cout<<"tempreture in farenhite
is:"<<convert_to_ferenhite<<endl;
return 0;
}
```

OUTPUT:-


```
Enter tempreture in celcius
62
tempreture in farenhite is:143
[1] + Done
n-6c2r1jwh.mcc" 1>"/tmp/Microsoft
janny@stoic-programmer:~/Document
```

4) Take student name and marks of your 2nd semester from user and then generate DMC which will contain obtained marks out of total and percentage.

```
#include<iostream>
using namespace std;
int main()
{
    int obt_marks;
    int percentage;
    int total_mrks=90;
    cout<<"Enter your marks in OOP lab";
    cin>>obt_marks;
    percentage=(obt_marks*100)/
    total_mrkscout<<obt_marks<<" out of " <<total_mrks<<" \
n your percentage is "<<percentage<<endl;
    return 0;
}
```


Output4:-

```
Enter your marks in OOP lab85
85 out of 90
your percentage is 94
[1] + Done
n-ct8z9wnz.2do" 1>"/tmp/Microsoft
janny@stoic-programmer:~/Documents
```

Question#5: lab manual other math functions.

Source code:-

```
#include<iostream>
#include<cmath>

using namespace std;

int main()
{

float x;
cout<<" Enter a number :";
cin>>x;

cout << "square root is " <<sqrt(x)<<endl;
```


OOP LAB

```
cout << round(23.4)<<"23.4 is rounded off  
to"<<endl;  
cout << "log of number is "<<log(x)<<endl;  
cout<<abs(x) <<"Returns the absolute value of  
number"<<endl;  
cout<<acos(x) <<" Returns the arccosine of  
number"<<endl<<endl;  
cout<<asin(x)<< " Returns the arcsine of  
number"<<endl<<endl;  
cout<<atan(x) <<" Returns the arctangent of  
number"<<endl<<endl;  
cout <<cos(x) <<" Returns the cosine of  
number"<<endl<<endl;  
cout<<tan(x)<<"value of tangent  
thita"<<endl<<endl;  
cout<<cosh(x)<<endl<<endl;  
cout<<floor(x)<<endl<<endl;  
cout<<sin(x)<<endl<<endl;  
  
return 0;  
}
```

OUTPUT5 BELOW:-

OOP LAB

```
Enter a number :256
square root is 16
2323.4 is rounded off to
log of number is 5.54518
256Returns the absolute value of number
nan Returns the arccosine of number

nan Returns the arcsine of number

1.56689 Returns the arctangent of number

-0.0397908 Returns the cosine of number

25.1116value of tangent thita

inf

256

-0.999208

[1] + Done          "/usr/bin/
n-ss6fmrhf.7kv" 1>"/tmp/Microsoft-MIEngine-
janny@stoic-programmer:~/Documents/c plus p
```

CONDITIONAL STATEMEN

QUESTION #1 SOURCE CODE:-

```
#include<iostream>

using namespace std;
int main()
{
    int integer;
    cout<<"Enter any Integer: "<<endl;
    cin>>integer;
    if(integer<0)
    cout<<integer<< "is a negetive integer"<<endl;
    else(integer>0);
    cout<<integer<<" is a postive integer"<<endl;

    return 0;

}
```

OUTPUT#1:

```
Enter any Integer:
-16
-16 is a negetive integer
[1] + Done
n-gt2svflo.c2l" 1>"/tmp/Micro
janny@stoic-programmer:~/Docu
```

```
Enter any Integer:
12
12 is a postive integer
[1] + Done
n-pys8b5o0.2ql" 1>"/tmp/Micro
janny@stoic-programmer:~/Docu
```


QUESTION#2 SOURCE CODE:-

```
#include<iostream>

using namespace std;

int main()
{
    int number;
    cout<<"Enter a number :"<<endl;
    cin>>number;
    if(number%2==0)
    cout<<number<<" is an Even number"<<endl;
    else
    cout<<number<<" is an odd integer"<<endl;

    return 0;
}
```

output#2:

```
Enter a number :
264
264 is an Even number
[1] + Done
n-f951llt7.uwj " 1>"/tmp/Mic
janny@stoic-programmer:~/Do
```



```
Enter a number :  
343  
343 is an odd integer  
[1] + Done  
n-ktxruydc.r5v" 1>"/tmp/Mi  
janny@stoic-programmer:~/D
```

Question3 Source code:- leap year

```
#include<iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
int year;
```

```
cout<<" Enter any year:"<<endl;
```

```
cin>>year;
```

```
if(year%4==0)
```

```
cout<<year<<" is a leap year "<<endl;
```

```
else
```

```
cout<<year<<" is not a leap year"<<endl;
```

```
return 0;
```


}

output#3:-

```
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
Enter any year:
2094
2094 is not a leap year
[1] + Done
n-slsq5ft5.24d" 1>"/tmp/Mic
janny@stoic-programmer:~/Do
```

Question 4 Source Code:

```
#include<iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
int num1;
```

```
int num2;
```

```
cout<<" Enter the first number"<<endl;
```


OOP LAB

```
cin>>num1;  
cout<<" enter the second number "<<endl;  
cin>>num2;  
if(num1>num2)  
cout<<num1<<" is greater than"<<num2<<endl;  
else  
cout<<num2<<" is greater than "<<num1<<endl;  
return 0;  
  
}
```

output#4:-

```
Enter the first number  
143  
enter the second number  
431  
431 is greater than 143  
[1] + Done  
n-cbvextg8.zvd" 1>"/tmp/Micr  
janny@stoic-programmer:~/Doc
```

if else-if and else:-

Question#1 Source Code:-

```
#include<iostream>
```


OOP LAB

```
using namespace std;

int main()
{
    int integer;

    cout<<"Enter an integerr :"<<endl;
    cin>>integer;

    if(integer==0)
        cout<<integer<<" is a neutral integerr"<<endl;

    else if(integer>0)
        cout<<integer<<" is an postive integer"<<endl;

    else
        cout<<integer<<" is a negetive integer"<<endl;

    return 0;
}
```

OUTPUT#1:-

```
Enter an integerr :
23
23 is an postive integer
```

```
Enter an integerr :
0
0 is a neutral integerr
[1] + Done
n-gwls2dlc.h4o" 1>"/tmp/M
janny@stoic-programmer:~/
```

```
8"
rog
Enter an integerr :
-410
-410 is a negetive integer
[1] + Done
n-2wg0dc0c.88x" 1>"/tmp/Micr
janny@stoic-programmer:~/
```


Question#2:- Source code

```
#include<iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
int temperture;
```

```
cout<<"Enter temperture in celcius:"<<endl;
```

```
cin>>temperture;
```

```
if(temperture<0)
```

```
cout<<" It is too cold outside stay home "<<endl;
```

```
else if(temperture<10 && temperture>0)
```

```
cout<<"it is cold outside but you will love it"<<endl;
```


OOP LAB

```
else if(tempreture<20 && tempreture>10)
cout<<"weather is mild nor hot not too cold enjoy this
weather"<<endl;
else
cout<<" the weather is very hot todayy stay home"<<endl;
return 0;}
```

OUtput2:-

```
Enter tempreture in celcius:
56
the weather is very hot todayy stay home
[1] + Done "/usr/bin
n-u55g6xgy.cjq" 1>"/tmp/Microsoft-MIEngine
janny@stoic-programmer:~/Documents/c plus
```

Question #3:- Source code

```
#include<iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
int marks;
```

```
cout<<" please enter your marks"<<endl;
```

```
cin>>marks;
```

```
if(marks<=100 && marks>=90)
```

```
cout<<" Your grade is A+"<<endl;
```

```
else if(marks<90 && marks>=80)
```


OOP LAB

```
cout<<" Your grade is A"<<endl;
else if(marks<80 && marks>=70)
cout<<" Your grade is B"<<endl;
else if(marks<70 && marks>=60)
cout<<" Your grade is C"<<endl;
else if(marks<60 && marks>=50)
cout<<" Your grade is D"<<endl;
else
cout<<" OOPs! Your grade is F"<<endl;
return 0;
}
```

Output#3:-

```
please enter your marks
34
OOPs! Your grade is F
[1] + Done
n-ielpuo5q.3g4" 1>"/tmp/Micro
janny@stoic-programmer:~/Docu
```

Question #4 :- Source code

```
#include<iostream>
```

```
using namespace std;
```


OOP LAB

```
int main()
{
    char oprator;
    int num1 ,num2;
    cout<<"Enter first number"<<endl;
    cin>>num1;
    cout<<" Enter second number"<<endl;
    cin>>num2;cout<<"Enter the operator for your
operation"<<endl;cin>>oprator;

    if(oprator=='+')
        cout<<" Sum of two number is = "<<num1+num2<<endl;
    else if(oprator=='-')
        cout<<"The difference btween 2 numbers is= "<<num1-
num2<<endl;
    else if(oprator=='*')
        cout<<"The product of given nums is =
"<<num1*num2<<endl;
    else if(oprator=='/')
        cout<<"The quotient of given numbers is =
"<<num1/num2<<endl;
    else
        cout<<"The remainder of given numbers is =
"<<num1%num2<<endl;

    return 0;
}
```

Output:-

OOP LAB

```
Enter first number
23
Enter second number
31
Enter the operator for your operation
*
The product of given nums is = 713
[1] + Done
janny@stoic-programmer:~/Documents/c p
```

Question #5:- Source Code Conditional Operator

```
#include<iostream>
using namespace std;
```

```
int main()
{
int number;
cout<<"Enter any non-zero Number : ";
cin>>number;
(number>0)?cout<< number <<" Number is
positive":cout<<"Number is negative";
return 0;
}
```

Output#5:

```
Enter any non-zero Number : 212
212 Number is positive[1] + Done
mp/Microsoft-MIEngine-In-14yvqjlx.
janny@stoic-programmer:~/Documents
```


Question#6:- Source Code

```
#include <iostream>
using namespace std;

int main()
{
    int n;
    cout << "Enter an integer: ";
    cin >> n;
    (n % 2 == 0) ? cout << n << " is even." : cout << n << " is
    odd.";
    return 0;
}
```

Output#6:-

```
Enter an integer: 6354
6354 is even.[1] + Done
ft-MIEngine-In-jba445e7.3ap
janny@stoic-programmer: ~/Do
```


Switch Statements

Question #1:- Source Code

```
# include <iostream>
using namespace std;

int main()
{
    char op;
    float num1, num2;

    cout << "Enter operator either + or - or * or /: ";
    cin >> op;

    cout << "Enter two operands: ";
    cin >> num1 >> num2;

    switch(op)
    {
        case '+':
```


OOP LAB

```
cout << num1+num2;  
break;
```

```
case '-':  
cout << num1-num2;  
break;
```

```
case '*':  
cout << num1*num2;  
break;
```

```
case '/':  
cout << num1/num2;  
break;
```

```
default:  
// If the operator is other than +, -, * or /, error message is shown  
cout << "Error! operator is not correct";  
break;  
}  
return 0;  
}
```

Output #1:-

```
Enter operator either + or - or * or /: /  
Enter two operands: 54  
9  
6 is the quotient of two numbers[1] + Done  
rm} 0<"/tmp/Microsoft-MIEngine-In-e1vpxh7o.  
janny@stoic-programmer:~/Documents/c plus p
```


Question #2:- Source Code

```
#include <iostream>
using namespace std;
int main()
{
    int n;
    cout << "Month No : ";
    cin >> n;
    switch(n)
    {
        case 1:
            cout << "January";
            break;
        case 2:
            cout << "February";
            break;
        case 3:
            cout << "March";
            break;
        case 4:
            cout << "April";
            break;
        case 5:
            cout << "May";
            break;
        case 6:
            cout << "June";
            break;
        case 7:
            cout << "July";
```


OOP LAB

```
break;
case 8:
cout <<"August";
break;
case 9:
cout <<"September";
break;
case 10:
cout <<"October";
break;
case 11:
cout <<"November";
break;
case 12:
cout <<"December";
break;
default:
cout <<"Invalid Month number\n Please try again ....\n";
break;
}
return 0;
}
```

Output #2:-


```
Month No : 8
August[1] + Done
gine-In-fuizyy4r.zz0" 1
janny@stoic-programmer:
```

FOR LOOP

Question #1:- Source Code

```
#include<iostream>

using namespace std;

int main()
{
int i;
cout << "\n\n Find the first 10 natural numbers:\n";
cout << "-----\n";
cout << " The natural numbers are: \n";
for (i = 1; i <= 10; i++)
{
cout << i << " ";
}
cout << endl;
}
```


OUTPUT #1:-

```
Find the first 10 natural numbers:
-----
The natural numbers are:
1 2 3 4 5 6 7 8 9 10
[1] + Done                                     "/usr
n-xlshr78b.qpe" 1>"/tmp/Microsoft-MIEn
janny@stoic-programmer:~/Documents/c p
```

QUESTION #2:- SOURCE CODE

```
// C++ program to print all Even
// and Odd numbers from 1 to N
#include <bits/stdc++.h>
using namespace std;

void printEvenNumbers(int N)
{
    cout << "Even: ";
    for (int i = 1; i <= 2 * N; i++) {
        if (i % 2 == 0)
            cout << i << " ";
    }
}
```


OOP LAB

```
void printOddNumbers(int N)
{
    cout << "\nOdd: ";
    for (int i = 1; i <= 2 * N; i++) {
        if (i % 2 != 0)
            cout << i << " ";
    }
}

int main()
{
    int N = 5;
    printEvenNumbers(N);
    printOddNumbers(N);
    return 0;
}
```

OUTPUT#2:-

```
Even: 2 4 6 8 10
Odd: 1 3 5 7 9 [1] + Done
soft-MIEngine-In-gilclhwi.b
janny@stoic-programmer:~/Do
```

QUESTION #3:-

SOURCE CODE

```
#include<iostream>

using namespace

std;

int main()
{
    int number,i;
    cout<<"Enter any number of your choice"<<endl;
```


OOP LAB

```
cin>>number;

for ( i = 1; i < 11; i++)
{
cout<< i*number<<endl;

}
return 0;

}
```

OUTPUT #3:-

```
Enter any number of your choice for its multiple
3
3
6
9
12
15
18
21
24
27
30
[1] + Done                                     "/usr/bin/gdb"
n-z3kvgxaj.r0j" 1>"/tmp/Microsoft-MIEngine-Out-o
janny@stoic-programmer:~/Documents/c plus plus$
```

QUESTION #4:- SOURCE CODE

```
#include <iostream>
using namespace std;
```


OOP LAB

```
int main()
{
int n;
unsigned long long factorial = 1;

cout << "Enter a positive integer: ";
cin >> n;

if (n < 0)
cout << "Error! Factorial of a negative number doesn't exist.";
else {
for(int i = 1; i <=n; ++i) {
factorial *= i;
}
cout << "Factorial of " << n << " = " << factorial;
}

return 0;
}
```

OUTPUT #4:-

```
Enter a positive integer: 12
Factorial of 12 = 479001600[1] + Done
<"/tmp/Microsoft-MIEngine-In-38y8qqvg.
janny@stoic-programmer:~/Documents/c p
```

WHILE LOOP

QUESTION #1:- SOURCE CODE

OOP LAB

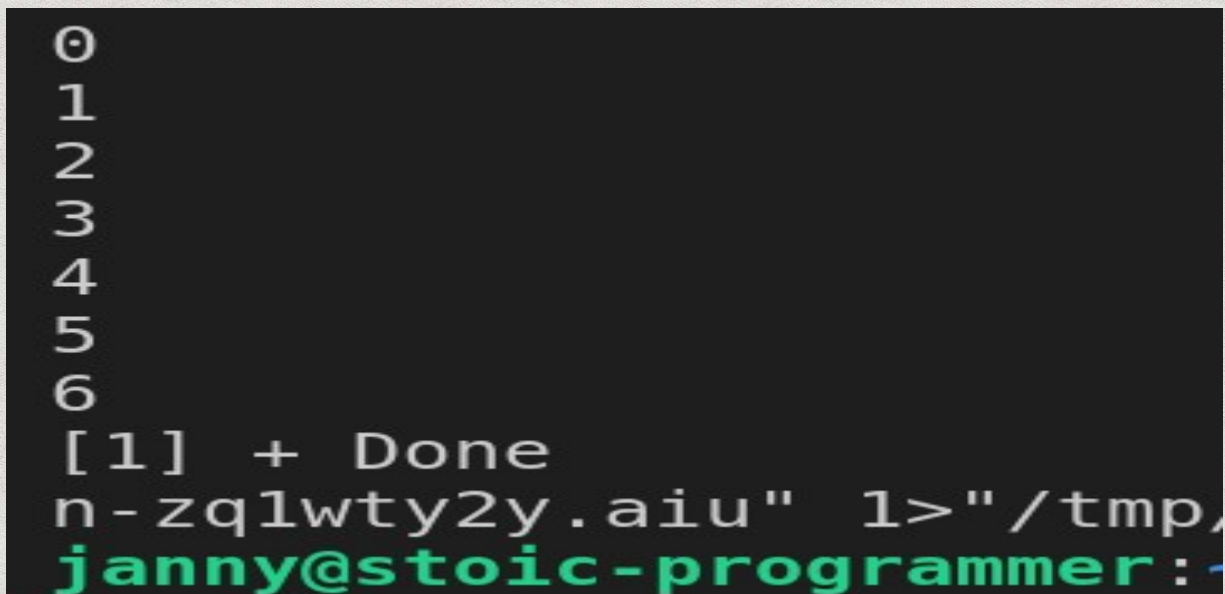
```
#include<iostream>

using namespace std;

int main()
{
    int i=0;

    while (i<7)
    {
        cout<<i<<"\n";
        i++;
    }
    return 0;
}
```

OUTPUT1:-



```
0
1
2
3
4
5
6
[1] + Done
n-zq1wty2y.aiu" 1>"/tmp,
janny@stoic-programmer:~$
```

QUESTION#2:-

```
#include<iostream>
```


OOP LAB

```
using namespace std;

int main()
{
    int i=0;

    while (i<10)
    {
        if(i%2==0)
            cout<<i<<" is an even number"<<endl;

        else
            cout<<i<<" is odd number"<<endl;

        i++;
    }
}
```

OUTPUT2:-

```
0  is an even number
1  is odd number
2  is an even number
3  is odd number
4  is an even number
5  is odd number
6  is an even number
7  is odd number
8  is an even number
9  is odd number
[1] + Done
n-aj77qmcfd85" 1>"/tmp/M.
janny@stoic-programmer:~/l
```

**QUESTION
#3:-**

OOP LAB

```
#include<stdio.h>
int main()
{
int num, i, fact=1;
printf("Enter the number\n");
scanf("%d",&num);
i=num;
while(i>=1)
{
fact=fact*i;
i--;
}
printf("The factorial of given number %d is %d\n",num,fact);
return 0;
}
```

OUTPUT#3:-

```
Enter the number
4
The factorial of given number 4 is 24
[1] + Done "/usr/
n-agzn0o26.r82" 1>"/tmp/Microsoft-MIEng
janny@stoic-programmer:~/Documents/c p
```


QUESTION #4:- SOURCE CODE

```
#include <iostream>
```

```
using namespace std;  
int main(){  
int num1,num2;  
char op;
```

```
do{  
cout<<"Enter the first number: ";  
cin>>num1;  
cout<<"Enter the second number: ";  
cin>>num2;  
cout<<"Enter the operation: ";  
cin>>op;
```

```
if (op=='+')  
{  
cout<<num1<<" + "<<num2<<" = "<<num1+num2;  
}  
else if (op=='-')  
{  
cout<<num1<<" - "<<num2<<" = "<<num1-num2;  
}  
else if (op=='*')  
{  
cout<<num1<<" * "<<num2<<" = "<<num1*num2;  
}  
else if (op=='/')
```


OOP LAB

```
{  
cout<<num1<<" / "<<num2<<" = "<<num1/num2;  
}  
else if (op=='%')  
{  
cout<<num1<<" % "<<num2<<" = "<<num1%num2;  
}  
else{  
cout<<"\nInvalid Operation"<<endl;  
}
```

```
string choice;  
cout<<"\n Do you want to do another calculation(yes/no)?";  
cin>>choice;  
if (choice=="yes"){  
continue;  
}  
else if(choice=="no"){  
break;  
}  
}  
while(true);  
return 0;  
}
```


OUTPUT#4:-

```
Enter the first number: 12
Enter the second number: 11
Enter the operation: -
12 - 11 = 1
Do you want to do another calculation(yes/no)?yes
Enter the first number: 23
Enter the second number: 12
Enter the operation: +
23 + 12 = 35
Do you want to do another calculation(yes/no)?yes
Enter the first number: 23
Enter the second number: 2
Enter the operation: *
23 * 2 = 46
Do you want to do another calculation(yes/no)?yes
Enter the first number: 64
Enter the second number: 8
Enter the operation: /
64 / 8 = 8
Do you want to do another calculation(yes/no)?mmm
Enter the first number: 12
Enter the second number: 13
Enter the operation: %
12 % 13 = 12
Do you want to do another calculation(yes/no)?no
[1] + Done
n-ohsxu7zv.jtv" 1>"/usr/bin/gdb" --i
n-ohsxu7zv.jtv" 1>"/tmp/Microsoft-MIEngine-Out-mgbh
janny@stoic-programmer:~/Documents/c plus plus$
```

DO WHILE LOOP

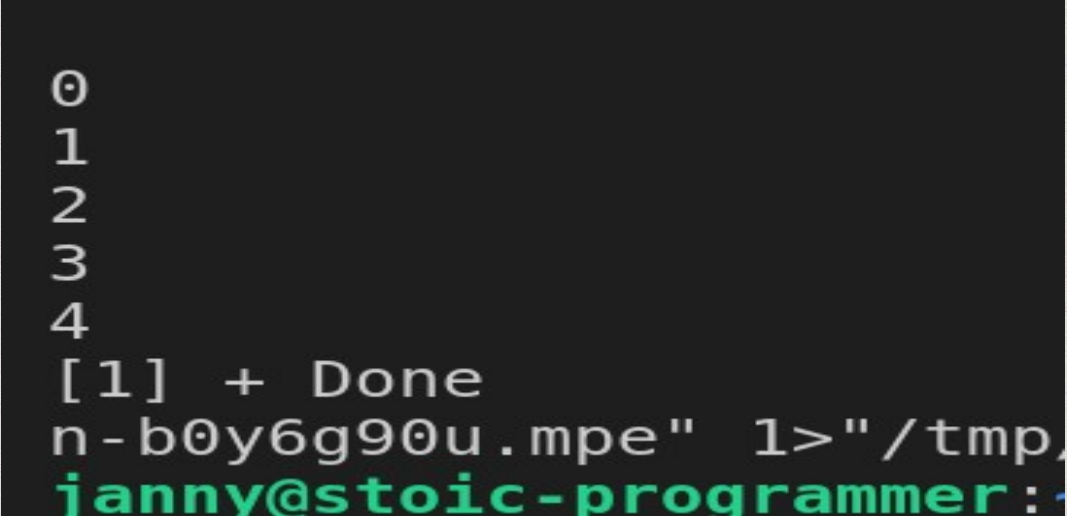
OOP LAB

QUESTION #1:-

```
#include<iostream>
using namespace std;
int main()
{
    int i = 0;
    do {
        cout << i << "\n";
        i++;
    }
    while (i < 5);
    return 0;

}
```

OUTPUT #1:-



```
0
1
2
3
4
[1] + Done
n-b0y6g90u.mpe" 1>"/tmp,
janny@stoic-programmer:-
```


QUESTION #2:- SOURCE CODE

```
#include<iostream>

using namespace std;

int main()
{
    int i=0;
    do
    {
        if(i%2==0)
            cout<<i<<" is an even number"<<endl;
        else
            cout<<i<<" is a odd number"<<endl;
        i++;
    } while(i<11);

    return 0;

}
```


OUTPUT#2:-

```
0    is an even number
1    is a odd number
2    is an even number
3    is a odd number
4    is an even number
5    is a odd number
6    is an even number
7    is a odd number
8    is an even number
9    is a odd number
10   is an even number
[1] + Done
n-5wrs7hzl.gg5" 1>"/tmp/Mic
janny@stoic-programmer:~/Do
```

QUESTION #3:- SOURCE CODE

```
#include<iostream>
```

```
using namespace std;
```


OOP LAB

```
int main()
{
int i=1,num;
cout<<"Enter a number :";
cin>>num;

do
{
cout<<i*num<<endl;
i++;

} while (i<=num);

return 0;

}
```

OUTPUT:-

```
Enter a number :6
6
12
18
24
30
36
[1] + Done
n-snf0weyi.71w" 1>"/tmp/M
janny@stoic-programmer:~/
```


OOP LAB

question #4:- SOURCE CODE

```
#include<iostream>

using namespace std;

int main()
{
    int i=1,no,fact=1;
    cout<<"enter a number";
    cin>>no;
    do
    {
        fact=fact*i;
        i++;
    }while(i<=no);
    cout<<"factorial of number is "<< fact;

    return 0;
}
```

OUTPUT:-

```
enter a number 6
factorial of number is 720[1] -
"/tmp/Microsoft-MIEngine-In-tu
janny@stoic-programmer:~/Docume
```

Question #5:- SOURCE CODE

OOP LAB

```
#include <iostream>

using namespace std;
int main(){
int num1,num2;
char op;

do{
cout<<"Enter the first number: ";
cin>>num1;
cout<<"Enter the second number: ";
cin>>num2;
cout<<"Enter the operation: ";
cin>>op;

if (op=='+')
{
cout<<num1<<" + "<<num2<<" = "<<num1+num2;
}
else if (op=='-')
{
cout<<num1<<" - "<<num2<<" = "<<num1-num2;
}
else if (op=='*')
{
cout<<num1<<" * "<<num2<<" = "<<num1*num2;
}
else if (op=='/')
{
cout<<num1<<" / "<<num2<<" = "<<num1/num2;
}
else if (op=='%')
}
```


OOP LAB

```
{  
cout<<num1<<" % "<<num2<<" = "<<num1%num2;  
}  
else{  
cout<<"\nInvalid Operation"<<endl;  
}  
  
string choice;  
cout<<"\n Do you want to do another calculation(yes/no)?";  
cin>>choice;  
if (choice=="yes"){  
continue;  
}  
else if(choice=="no"){  
break;  
}  
}  
while(true);  
return 0;  
}
```

output#5:-

OOP LAB

```
Enter the first number: 12
Enter the second number: 11
Enter the operation: -
12 - 11 = 1
Do you want to do another calculation(yes/no)?yes
Enter the first number: 23
Enter the second number: 12
Enter the operation: +
23 + 12 = 35
Do you want to do another calculation(yes/no)?yes
Enter the first number: 23
Enter the second number: 2
Enter the operation: *
23 * 2 = 46
Do you want to do another calculation(yes/no)?yes
Enter the first number: 64
Enter the second number: 8
Enter the operation: /
64 / 8 = 8
Do you want to do another calculation(yes/no)?mmm
Enter the first number: 12
Enter the second number: 13
Enter the operation: %
12 % 13 = 12
Do you want to do another calculation(yes/no)?no
[1] + Done                                "/usr/bin/gdb" --j
n-ohsxu7zv.jtv" 1>"/tmp/Microsoft-MIEngine-Out-mgbh
janny@stoic-programmer:~/Documents/c plus plus$
```


OOP LAB

****NESTED LOOPS****

QUESTION#1:- SOURCE CODE

```
#include<iostream>
using namespace std;
int main()
{
//Right Triangle pattern using asterisk in reverse order
int square;
cout<<"Enter The Size of Trianle = "; // size
cin>>square;
for(int i = square;i>=1;i--) // outer loop
{
for(int j=1;j<=i;j++) //inner loop
{
cout<<"* "; // value that is output
}
cout<<endl;//new line for next line output
}
return 0;
}
```

OUTPUT:-

```
Enter The Size of Trianle = 5
* * * * *
* * * *
* * *
* *
*
[1] + Done
n-chd510eo.r9a" 1>"/tmp/Microso
janny@stoic-programmer:~/Docume
```


OOP LAB

QUESTION #2:-

```
#include<iostream>
using namespace std;
int main()
{
    int triangle;
    cout<<"Enter The Size of Trianle = "; // size
    cin>>triangle;
    for(int i = triangle;i>=1;i--) // outer loop
    {
        for(int j=1;j<=i;j++) //inner loop
        {
            cout<<j;
            cout<<endl;
        }
        return 0;
    }
}
```

OUTPUT:-

```
Enter The Size of Trianle = 6
123456
12345
1234
123
12
1
[1] + Done
n-v2tzxoxf.zug" 1>"/tmp/Micros
janny@stoic-programmer:~/Docum
```

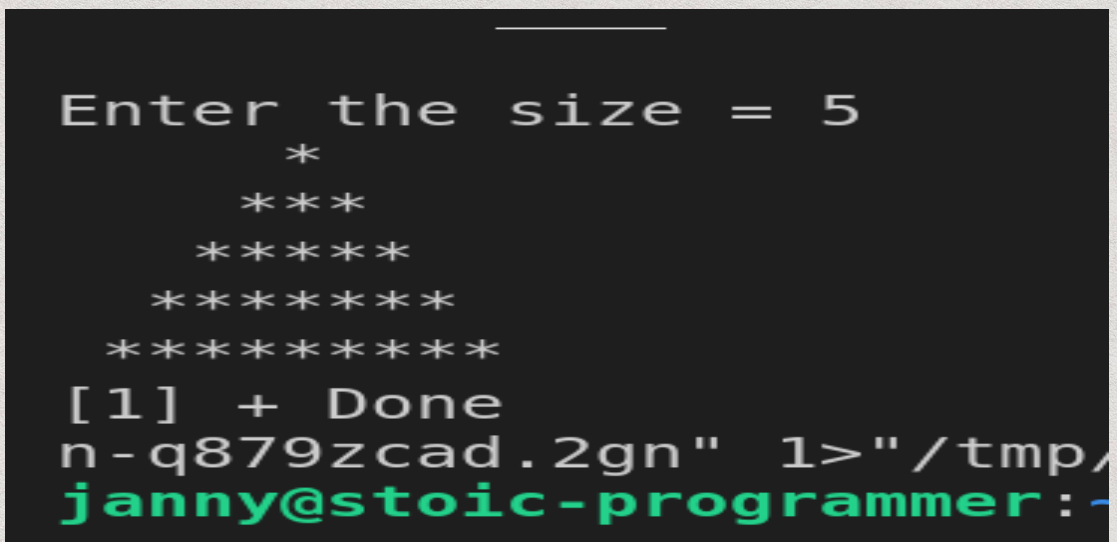

QUESTION #3:- SOURCE CODE

```
#include<iostream>
using namespace std;
int main() {
int value;
cout << "Enter the size = ";
cin >> value;
int space = value;
for (int i = 0; i < value; i++) {
for (int j = space; j > 0; j--) {
cout << " ";
}
for (int star = 0; star <= i * 2; star++) {
cout << "*";
}
space--;
cout << endl;
}

return 0;

}
```

OUTPUT:-



```
Enter the size = 5
      *
     ***
    *****
   *********
  ***********
 [1] + Done
n-q879zcad.2gn" 1>"/tmp/
janny@stoic-programmer: ~
```


OOP LAB

QUESTION #4:-

```
#include <iostream>
using namespace std;
```

```
int main()
{
    int rows;
```

```
    cout << "Enter number of rows: ";
    cin >> rows;
```

```
    for(int i = rows; i >= 1; --i)
    {
        for(int space = 0; space < rows-i; ++space)
            cout << " ";
```

```
        for(int j = i; j <= 2*i-1; ++j)
            cout << "* ";
```

```
        for(int j = 0; j < i-1; ++j)
            cout << "* ";
```

```
    cout << endl;
}
```

```
return 0;
}
```


OUTPUT:-

```
Enter number of rows: 6
* * * * *
  * * * *
    * * *
      * *
        *
          *
            *

[1] + Done
n-nnd1mwps.k71" 1>"/tmp/Mic
janny@stoic-programmer:~/Do
```

1D AND 2D ARRAYS

QUESTION #1:- SOURCE CODE

```
#include<iostream>
using namespace std;
```

```
int main()
{
int row, col, m1[10][10], m2[10][10], sum[10][10];
```

```
cout<<"Enter the number of rows(should be >1 and <10): ";
cin>>row;
```


OOP LAB

```
cout<<"Enter the number of column(should be >1 and <10):  
";  
cin>>col;  
cout << "Enter the elements of first 1st matrix: ";  
for (int i = 0;i<row;i++ ) {  
for (int j = 0;j < col;j++ ) {  
cin>>m1[i][j];  
}  
}  
cout << "Enter the elements of first 1st matrix: ";  
for (int i = 0;i<row;i++ ) {  
for (int j = 0;j<col;j++ ) {  
cin>>m2[i][j];jmkmj  
}  
}  
  
cout<<"Output: ";  
for (int i = 0;i<row;i++ ) {  
for (int j = 0;j<col;j++ ) {  
sum[i][j]=m1[i][j]+m2[i][j];  
cout<<sum[i][j]<<" ";  
}  
}  
  
return 0;  
}
```


OOP LAB

OUTPUT:-

```
Enter the number of rows(should be >1 and <10): 3
Enter the number of column(should be >1 and <10): 2
Enter the elements of first 1st matrix: 1
2
3
4
5
6
Enter the elements of first 1st matrix: 1
2
3
5
6
7
Output: 2 4 6 9 11 13 [1] + Done
p/Microsoft-MIEngine-In-gkrfun2z.qun" 1>"/tmp/Micros
iannv@stoic-programmer:~/Documents/c plus plus$
```


OOP LAB

QUESTION #2:-

```
#include <iostream>
#include <cstdlib>
#include <ctime>
```

```
using namespace std;
```

```
int main()
{
    int no_of_numbers = 100;
    int first_number = 1;
```

```
    std::srand(std::time(0));
```

```
    int random = std::rand() % no_of_numbers + first_number;
    for (int i=0; i<10; ++i)
    {
        random = std::rand() % no_of_numbers + first_number;
        std::cout << random << std::endl;
    }
```

```
    return 0;
}
```

OUTPUT:-

```
70
77
66
72
30
42
19
5
96
23
[1] + Done
n-6l1ghkvh.5rl"
janny@stoic-prog
```


QUESTION4:-

```
#include <iostream>
#include <ctime> // For time()
#include <cstdlib> // For srand() and rand()

using namespace std;
int main()
{
    const int row=5;
    const int column=10;
    /*int rnum;*/
    double table[row][column];
    /*srand(time(0)); // Initialize random number generator.
    rnum = (rand() % 50) + 1;
    if (rnum>1 && rnum <100)*/
    for(int r=0; r<row; r++)
    { for(int c=0; c<column;c++)
    { cout << table[row][column];
    }
    }

    system("pause");
    return 0;
}
```


OOP LAB

QUESTION #5:-

```
#include<iostream>
using namespace std;
int main ()
{
    int arr[10], n, i, max, min;
    cout << "Enter the size of the array : ";
    cin >> n;
    cout << "Enter the elements of the array : ";
    for (i = 0; i < n; i++)
    cin >> arr[i];
    max = arr[0];
    for (i = 0; i < n; i++)
    {
        if (max < arr[i])
            max = arr[i];
    }
    min = arr[0];
    for (i = 0; i < n; i++)
    {
        if (min > arr[i])
            min = arr[i];
    }
    cout << "Largest element : " << max;
    cout << "\n Smallest element : " << min;
    return 0;
}
```


OUTPUT:-

```
Enter the size of the array : 4
Enter the elements of the array : 1
2
3
4
Largest element : 4
Smallest element : 1[1] + Done
/Microsoft-MIEngine-In-n50x1dt1.sgt"
janny@stoic-programmer:~/Documents/c
```

QUESTION #6:-

```
#include <iostream>
using namespace std;
```

```
int main() {
int test[3][2] = {{2, -5},
{4, 0},
{9, 1}};
```

```
for (int i = 0; i < 3; ++i) {
```

```
for (int j = 0; j < 2; ++j) {
cout << "test[" << i << "][" << j << "] = " << test[i][j] << endl;
}
}
```

```
return 0;
}
```


OUTPUT:-

```
test[0][0] = 2
test[0][1] = -5
test[1][0] = 4
test[1][1] = 0
test[2][0] = 9
test[2][1] = 1
[1] + Done
n-6dwmf1er.vgf" 1>"
ianny@steic-program
```

QUESTION #7:-

```
// C++ program of above implementation
```

```
#include<iostream>
```

```
using namespace std;
```

```
struct Pair
```

```
{
```

```
int min;
```

```
int max;
```

```
};
```

```
struct Pair getMinMax(int arr[], int low,  
int high)
```

```
{
```

```
struct Pair minmax, mml, mmr;
```

```
int mid;
```


OOP LAB

```
if (low == high)
{
    minmax.max = arr[low];
    minmax.min = arr[low];
    return minmax;
}
if (high == low + 1)
{
    if (arr[low] > arr[high])
    {
        minmax.max = arr[low];
        minmax.min = arr[high];
    }
    else
    {
        minmax.max = arr[high];
        minmax.min = arr[low];
    }
    return minmax;
}
mid = (low + high) / 2;
mml = getMinMax(arr, low, mid);
mmr = getMinMax(arr, mid + 1, high);
// Compare minimums of two parts
if (mml.min < mmr.min)
    minmax.min = mml.min;
else
    minmax.min = mmr.min;
// Compare maximums of two parts
if (mml.max > mmr.max)
    minmax.max = mml.max;
else
    minmax.max = mmr.max;
return minmax;
```


OOP LAB

```
}
```

```
int main()
{
int arr[] = { 1000, 11, 445,
1, 330, 3000 };
int arr_size = 6;
struct Pair minmax = getMinMax(arr, 0,
arr_size - 1);
cout << "Minimum element is "
<< minmax.min << endl;
cout << "Maximum element is "
<< minmax.max;
return 0;
}
```

OUTPUT:-

```
Minimum element is 1
Maximum element is 3000[1] + Done
mp/Microsoft-MIEngine-In-vxe5m33c.8si" 1>"
janny@stoic-programmer:~/Documents/c plus
```


FUNCTIONS

QUESTION #1:- SOURCE CODE

```
#include <iostream>
using namespace std;

void myFunction() {

    int input,endpoint;
    cout<<"please enter a number: ";
    cin>>input;

    cout<<"enter the endpoint:";
    cin>>endpoint;

    for (int i = 1; i < endpoint; i++)
    {
        cout<<i*input<<endl;
    }
}

int main() {
    myFunction();
    return 0;
}
```


OUTPUT:-

```
please enter a number: 10
enter the endpoint:10
10
20
30
40
50
60
70
80
90
[1] + Done
n-udifclym.plc" 1>"/tmp/Micr
janny@stoic-programmer: ~/Doc
```

QUESTION #2:- SOURCE CODE

```
#include<iostream>
using namespace std;
```

```
int factorial(int n);
```

```
int main()
{
int n;
```

```
cout << "Enter a positive integer: ";
```


OOP LAB

```
cin >> n;

cout << "Factorial of " << n << " = " << factorial(n);

return 0;
}

int factorial(int n)
{
if(n > 1)
return n * factorial(n - 1);
else
return 1;
}
```

OUTPUT:-

```
Enter a positive integer: 10
Factorial of 10 = 3628800[1] + Done
/tmp/Microsoft-MIEngine-In-iosn3twj.jmt
janny@stoic-programmer:~/Documents/c p1
```


QUESTION #3:-

```
#include<iostream>
using namespace std;
```

```
// function declaration
double add(double n1, double n2);
double subtract(double n1, double n2);
double multiply(double n1, double n2);
double divide(double n1, double n2);
```

```
// main function
int main()
{
    // declare variables
    double num1, num2;
```

```
// take input from end-user
cout << "Enter two Numbers :: ";
cin >> num1 >> num2;
```

```
// addition of two number
cout << "Addition = "<< add(num1, num2) << endl;
```

```
// subtraction of two number
cout << "Subtraction = "<< subtract(num1, num2) << endl;
```

```
// multiplication of two number
cout << "Multiplication = "<< multiply(num1, num2) <<
endl;
```

```
// division of two number
cout << "Division = "<< divide(num1, num2) << endl;
```


OOP LAB

```
return 0;  
}
```

```
// function to add two numbers  
double add(double n1, double n2)  
{  
return n1+n2;  
}
```

```
// function to subtract two numbers  
double subtract(double n1, double n2)  
{  
return n1-n2;  
}
```

```
// function to multiply two numbers  
double multiply(double n1, double n2)  
{  
return n1*n2;  
}
```

```
// function to divide two numbers  
double divide(double n1, double n2)  
{  
return n1/n2;  
}
```


OUTPUT:-

```
Enter two Numbers :: 20 12
Addition = 32
Subtraction = 8
Multiplication = 240
Division = 1.66667
[1] + Done
n-amfuo6gz.yhz" 1>"/tmp/Micros
janny@stoic-programmer:~/Docum
```

QUESTION 4:

```
#include <iostream>
using namespace std;
```

```
void display(int m[5]) {
    cout << "Displaying salary: " << endl;
```

```
    for (int i = 0; i < 5; ++i) {
        cout << "Employee " << i + 1 << ": " << m[i] << endl;
    }
```


OOP LAB

```
}
```

```
int main() {
```

```
int salary[5] =  
{200000,300000,230000,1200000,34342300};  
// call display function  
display(salary);
```

```
return 0;  
}
```

OUTPUT:-

```
Displaying salary:  
Employee 1: 200000  
Employee 2: 300000  
Employee 3: 230000  
Employee 4: 1200000  
Employee 5: 34342300  
[1] + Done  
n-x591cydv.m6s" 1>"/tmp/M  
janny@stoic-programmer:~/
```


QUESTION 5:- SOURCE CODE

```
#include<iostream>

using namespace std;

int print_type(int n){

cout<<endl;
cout<<n<<" has datatype integer";

return 0;

}

double print_type(double l){
cout<<endl;
cout<<l<<" has a datatype Double";

return 0;
}

bool print_type(bool x){
cout<<endl;
cout<<x<<" has datatype of BOOL";

return 0;
}

char print_type(char s ){
cout<<endl;
cout<<s<<" has a dataype Char";
return 0;
}
```


OOP LAB

```
int main(){
    print_type('S');
    print_type(false);
    print_type(1.12121212);
    print_type(12323);
```

```
    cout<<endl;
    return 0;
}
```

OUTPUT:-

```
S has a datatype Char
0 has datatype of BOOL
1.12121 has a datatype Double
12323 has datatype integer
[1] + Done
n-xglx8k4d.b4s" 1>"/tmp/Microsoft
janny@stoic-programmer:~/Documen
```


POINTERS:-

QUESTION #1:- SOURCE CODE

```
#include<iostream>

using namespace std;

void convert(double*value);
int main()
{
double farenhite;

cout<<" Enter the tempreture in farenhite";
cin>>farenhite;

convert(&farenhite);

return 0;

}

void convert(double* value)
{
double cel=*value-32;
cel=cel*5/9;

cout<<"Tempreture of celcius"<<cel<<endl<<endl;
}
```


OUTPUT:-

```
Enter the temperture in farenhite 116
Temperture of celcius46.6667

[1] + Done                                     "/usr/
n-0gkf6nor.3j2" 1>"/tmp/Microsoft-MIEng
janny@stoic-programmer:~/Documents/c pl
```

QUESTION #2:-

```
#include <iostream>
using namespace std;
double convert(double* kilograms);

int main()
{
    double kilograms;

    cout<<"Enter kilograms: ";
    cin>>kilograms;
    cout<<kilograms<<" kilogram(s) = 
    "<<convert(&kilograms)<<" gram(s).\n";
    system("pause");
    return 0;
}

double convert(double* kilograms){
    return *kilograms*1000;
}
```


OUTPUT:-

```
Enter kilograms: 33.3
33.3 kilogram(s) = 33300 gram(s).
sh: 1: pause: not found
[1] + Done
n-aidvzaok.9my" 1>"/tmp/Microsoft
janny@stoic-programmer:~/Document
```

QUESTION #-: SOURCE CODE

```
#include <iostream>
#define MAX_SIZE 100
using namespace std;
int main() {
    char text[MAX_SIZE];
    char * str = text;
    int count = 0;
    cout<<"Enter any string: ";
    cin>>text;
    while(*(str++) != '\0') count++;
    cout<<"Length of "<<text<<" is "<<count;
    return 0;
}
```


OUTPUT:-

```
Enter any string: STOICPROGRAMMERAJAM
Length of STOICPROGRAMMERAJAM is 20[1] +
bgTerm} 0<"/tmp/Microsoft-MIEngine-In-0rpb
janny@stoic-programmer:~/Documents/c plus
```

QUESTION #5:-

```
#include <iostream>
#define MAX_SIZE 100 // Maximum size of the string
using namespace std;
int main() {
    char str1[MAX_SIZE], str2[MAX_SIZE];
    char * s1 = str1;
    char * s2 = str2;
    // Inputting 2 strings from user
    cout<<"Enter 1st string: ";
    cin>>str1;
    cout<<"Enter 2nd string: ";
    cin>>str2;
    // Moving till the end of str1
    while(*(++s1));
    // Coping str2 to str1
    while(*(s1++) = *(s2++));
    cout<<"combined strings :"<<str1;
    return 0;
}
```


OUTPUT:-

```
Enter 1st string: STOIC
Enter 2nd string: NAJAM
Concatenated string:STOICNAJAM[1]
} 0<"/tmp/Microsoft-MIEngine-In-05
janny@stoic-programmer:~/Documents
```

QUESTION #5:-

```
#include <iostream>
#define MAX_SIZE 100 // Maximum size of the string
using namespace std;
int main() {
char str1[MAX_SIZE], str2[MAX_SIZE];
char * s1 = str1;
char * s2 = str2;
// Inputting 2 strings from user
cout<<"Enter 1st string: ";
cin>>str1;
cout<<"Enter 2nd string: ";
cin>>str2;
// Moving till the end of str1
while(*(++s1));
// Coping str2 to str1
while(*(s1++) = *(s2++));
cout<<"combined strings :"<<str1;
return 0;
}
```


OUTPUT:-

```
Enter 1st string: STOIC
Enter 2nd string: NAJAM
Concatenated string:STOICNAJAM[1]
} 0<"/tmp/Microsoft-MIEngine-In-05
janny@stoic-programmer:~/Documents
```

STRUCTURES

QUESTION#1:- SOURCE CODE

```
#include <iostream>
#include <iomanip>
using namespace std;
```

```
struct Employee{
int number;
float compensation;
};
```

```
int main(){
struct Employee employee[3];
for(int i=0;i<3;i++){
cout<<"Enter the employee number "<<(i+1)<<": ";
cin>>employee[i].number;
```


OOP LAB

```
cout<<"Enter the employee compensation  
<<(i+1)<<": ";  
cin>>employee[i].compensation;  
cout<<"\n";  
}  
cout<<"\n";  
for(int i=0;i<3;i++){  
cout<<"The employee number "<<(i+1)<<":  
<<employee[i].number<<"\n";  
cout<<"The employee compensation "<<(i+1)<<":  
<<employee[i].compensation<<"\n";  
}  
  
system("pause");  
return 0;  
}
```


OUTPUT:-

```
Enter the employee number 1: 02002
Enter the employee compensation 1: 320000

Enter the employee number 2: 01010
Enter the employee compensation 2: 2320903

Enter the employee number 3: 020120
Enter the employee compensation 3: 3828374
```

```
The employee number 1: 2002
The employee compensation 1: 320000
The employee number 2: 1010
The employee compensation 2: 2.3209e+06
The employee number 3: 20120
The employee compensation 3: 3.82837e+06
sh: 1: pause: not found
[1] + Done                                "/usr/bin/gdb
n-exrf54oq.z45" 1>"/tmp/Microsoft-MIEngine-Out
janny@stoic-programmer:~/Documents/c plus plus
```


QUESTION #2:-

```
#include <iostream>
#include <iomanip>
using namespace std;
```

```
struct Time{
int hours;
int minutes;
int seconds;
};
```

```
int main(){
struct Time time1;
struct Time time2;
struct Time timeSum;
cout<<"Enter a time value in hours, minutes, and
seconds 1: ";
cin>>time1.hours>>time1.minutes>>time1.seconds;
cout<<"Enter a time value in hours, minutes, and
seconds 2: ";
cin>>time2.hours>>time2.minutes>>time2.seconds;
int
totalSeconds1=time1.hours*60*60+time1.minutes*60
+time1.seconds;
int
totalSeconds2=time2.hours*60*60+time2.minutes*60
+time2.seconds;
```


OOP LAB

```
int sumSeconds=totalSeconds1+totalSeconds2;
```

```
cout<<"\nThe total number of seconds time 1:  
"<<totalSeconds1<<" seconds\n";  
cout<<"The total number of seconds time 2:  
"<<totalSeconds2<<" seconds\n";  
/
```

```
cout<<"\nTime 1: "<<setw(2) <<  
setfill('0')<<time1.hours<<":"<<setw(2) <<  
setfill('0')<<time1.minutes<<":"<<setw(2) <<  
setfill('0')<<time1.seconds<<"\n";  
cout<<"Time 2: "<<setw(2) <<  
setfill('0')<<time2.hours<<":"<<setw(2) <<  
setfill('0')<<time2.minutes<<":"<<setw(2) <<  
setfill('0')<<time2.seconds<<"\n";
```

```
cout<<"\nAdd two times\n";  
cout<<"The sum of two times: "<<sumSeconds<<"  
seconds\n";  
timeSum.minutes = sumSeconds / 60;  
timeSum.seconds = sumSeconds % 60;  
timeSum.hours = timeSum.minutes / 60;  
timeSum.minutes = timeSum.minutes % 60;  
cout<<"Time sum: "<<setw(2) <<  
setfill('0')<<timeSum.hours<<":"<<setw(2) <<  
setfill('0')<<timeSum.minutes<<":"<<setw(2) <<  
setfill('0')<<timeSum.seconds<<"\n";  
system("pause");  
return 0;
```


}

OUTPUT:-

```
Enter a time value in hours, minutes, and seconds 1: 2 30 45
Enter a time value in hours, minutes, and seconds 2: 3 45 32

The total number of seconds time 1: 9045 seconds
The total number of seconds time 2: 13532 seconds

Time 1: 02:30:45
Time 2: 03:45:32

Add two times
The sum of two times: 22577 seconds
Time sum: 06:16:17
sh: 1: pause: not found
[1] + Done                                "/usr/bin/gdb" --interpreter=mi --tty
n-vrb2c3y2.4d0" 1>"/tmp/Microsoft-MIEngine-Out-rnuaqlun.y26"
janny@stoic-programmer:~/Documents/c plus plus$
```


OOP LAB

QUESTION #3:-

```
#include <iostream>
using namespace std;
////////////////////////////////////
struct Distance
{
int feet;
float inches;
};
////////////////////////////////////
struct Volume
{
Distance length;
Distance width;
Distance height;
};
////////////////////////////////////
int main()
{
float l, w, h;
Volume room1 = { { 16, 3.5 }, { 12, 6.25 }, { 8, 1.75 } };
l = room1.length.feet + room1.length.inches / 12.0;
w = room1.width.feet + room1.width.inches / 12.0;
h = room1.height.feet + room1.height.inches / 12.0;
cout << "Volume = " << l*w*h << " cubic feet\n";
return 0;
}
```


OUTPUT:-

```
Volume = 1661.63 cubic feet
[1] + Done
n-tvj01rmt.llz" 1>"/tmp/Microsoft
janny@stoic-programmer:~/Document
```

QUESTION #5:-

```
#include <iostream>
using namespace std;
////////////////////////////////////
struct phone
{
    int area;
    int exchange;
    int number;
};
////////////////////////////////////
int main()
{
    phone ph1 = { 212, 767, 8900 };
    phone ph2;
    cout << "\nEnter your area code, exchange, and
number";
    cout << "\n(Don't use leading zeros) : ";
    cin >> ph2.area >> ph2.exchange >> ph2.number;
```


OOP LAB

```
cout << "\nMy number is " //display numbers
<< '(' << ph1.area << ")"
<< ph1.exchange << ' - ' << ph1.number;
cout << "\nYour number is "
<< '(' << ph2.area << ")"
<< ph2.exchange << ' - ' << ph2.number << endl;
return 0;
}
```

output:-

```
Enter your area code, exchange, and number
(Don't use leading zeros) : 512
534
744
```

```
My number is (212) 76721087048900
Your number is (512) 5342108704744
[1] + Done "/usr/bin/gd
n-clc66cgj.3vz" 1>"/tmp/Microsoft-MIEngine-Out
janny@stoic-programmer:~/Documents/c plus plus
```


OOP LAB

THE END

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