Shell Programming using user defined variables, arithmetic operators

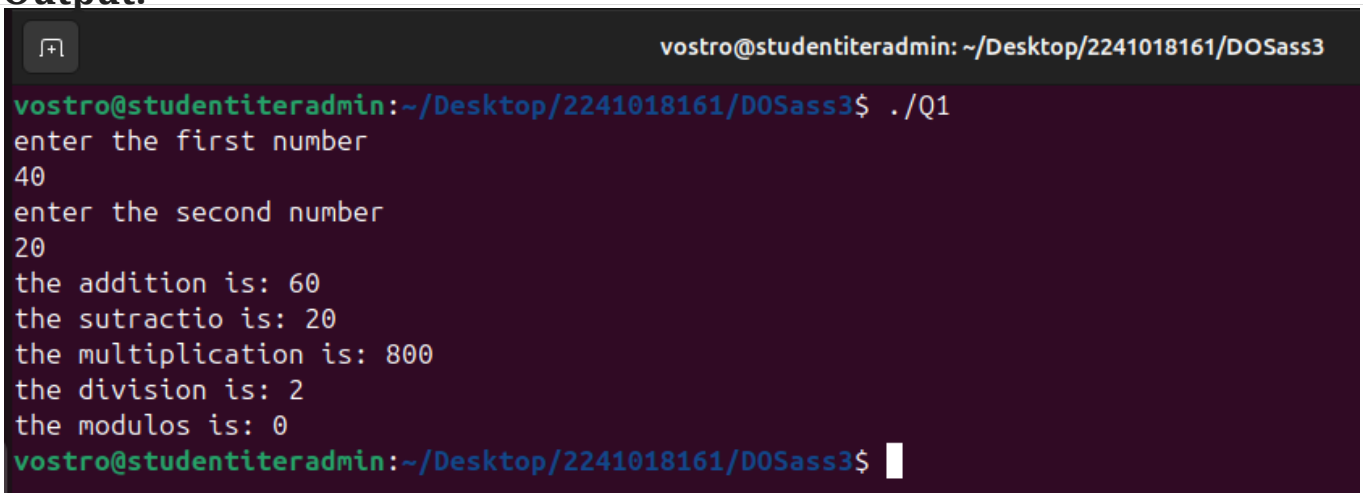
,conditional statements

Q1. Write a shell script iaop to perform integer arithmetic on two numbers, where the value of the two numbers will be given during runtime.

Commands: -

```
echo “Enter the first number: ”
read n
echo “Enter the second number: ”
read m
c=`expr $n + $m`
echo “The addition is : $c”
d=`expr $n - $m`
echo “The substraction is : $d”
e=`expr $n \* $m`
echo “The multiplication is : $e”
f=`expr $n / $m`
echo “The division is : $f”
g=`expr $n  %  $m`
echo “The modulo is : $g”
```

Output:



Q2. Write a shell script faop to perform floating point arithmetic on two numbers, where the value of the two numbers will be given during runtime.

Commands: -

```
echo “Enter the first Floating Point number:”
read n
echo “Enter the second Floating Point number:”
read m
c=$(echo “$n + $m”|bc)
echo “The addition is : $c”
d=$(echo “$n - $m”|bc)
echo “The substraction is : $d”
e=$(echo “$n * $m”|bc)
echo “The multiplication is : $e”
f=$(echo “$n / $m”|bc)
echo “The division is : $f”
```

Output:

```
vostro@studentiteradmin: ~/Desktop/2241018161/DOSass3
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Q2
enter the first floating point number
50
enter the second floating point number
40
the addition is: 90
the subtraction is: 10
the multiplication is: 2000
the division is: 1
the modulos is: 10
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$
```

Q3. Ramesh's basic salary is input through the keyboard. His dearness allowance is 40% of basic salary, and house rent allowance is 20% of basic salary. Write a program to calculate his gross salary.

Commands:

```
echo "Enter the basic salary of Ramesh"
read n
da= `echo $n \*  0.4|bc`
hr=`echo $n \*  0.2|bc`
gs=`echo $da +  $hr|bc`
a=`echo $gs  +  $n|bc`
echo "Ramesh's Gross salary is $a"
```

Output:

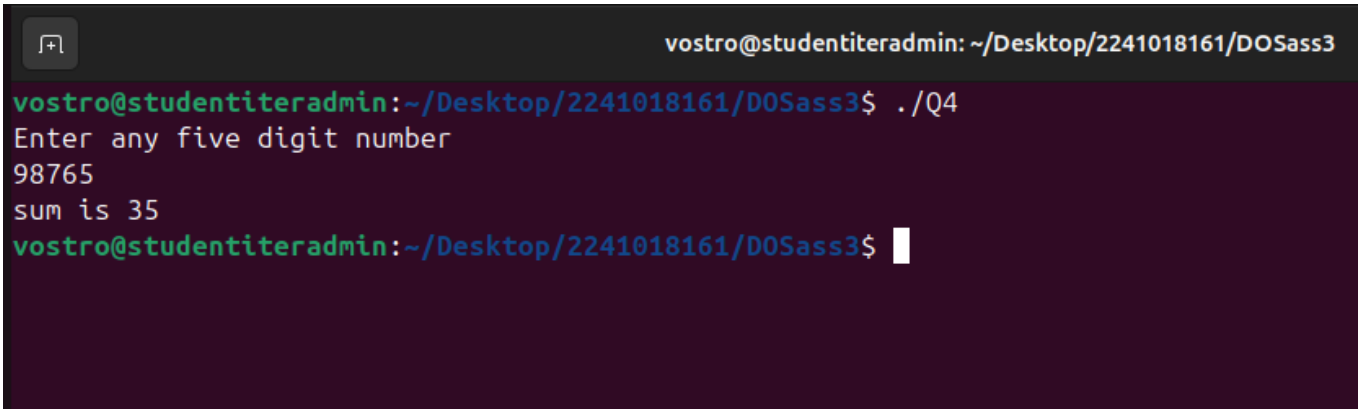
```
vostro@studentiteradmin: ~/Desktop/2241018161/DOSass3
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Q3
Enter the salary
50000
Gross Salary is 80000.0
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$
```

Q4. If a five digit number is input given through the keyboard during runtime, write a program to calculate the sum of its digits.

Commands:

```
echo " Enter a number"
read n
rem=0
sum=0
while [ $n -gt 0 ]
do
        rem=$(($n % 10))
        sum=$(($sum+$rem))
        n=$(($n / 10))
done
echo " Sum of the digits is $sum "
```

Output:

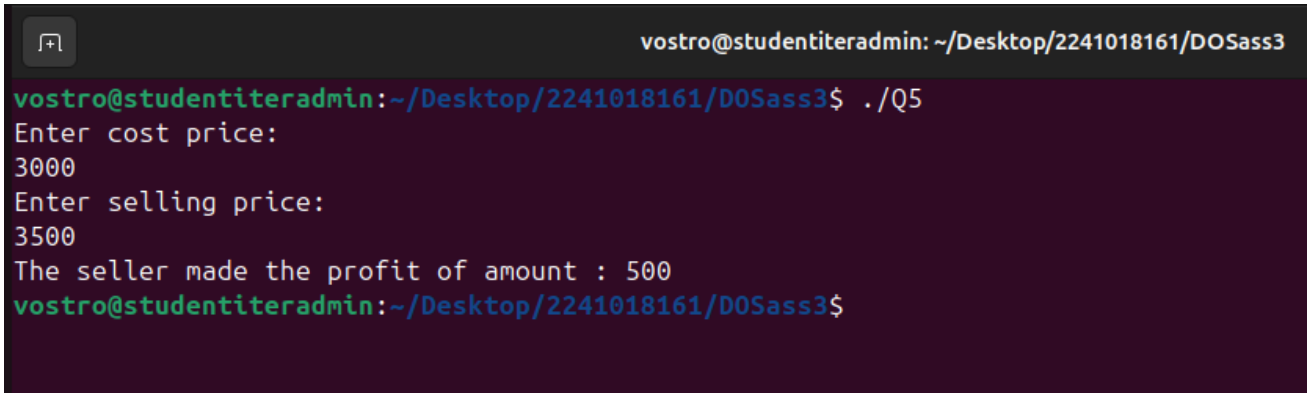


Q5. If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit was made or loss incurred.

Command: -

```
echo “Enter cost price:”
read n
echo “Enter selling price:”
read m
if [ $m -gt $n ]
then
x=`expr $m - $n`
echo “The seller made the profit of amount : $x”
else
y=`expr $n - $m`
echo “The seller made the loss of amount : $y”
fi
```

Output:

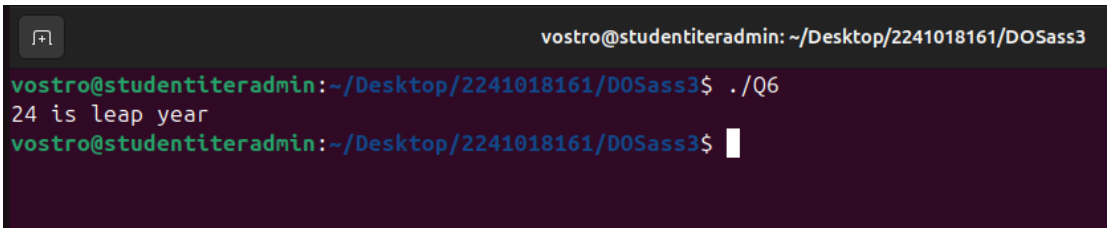


Q6. Write a shell script which receives any year from the keyboard and determines, whether the year is a leap year or not. If no argument is supplied the current year should be assumed.

Commands: -

```
if [  $1 ]
then
year=$1
else
year=$(date +%y)
fi
a=$(($year%400))
b=$(($year%100))
c=$(($year%4))
if [  $a -eq 0 -o $b -ne 0 -a $c -eq 0 ]
then
echo “$year is leap year”
else
echo “$year is not leap year”
fi
```

Output:



Q7. Write a shell script allow that will display a message to enter internal mark and percentage in attendance, if the entered mark is greater than equal to 20 and entered percentage in attendance is greater that equal to 75 then display the message Allowed for Semester otherwise display the message Not allowed.

Commands:-

```
echo “Enter your internal mark”
read mark
echo “Enter your attendance percentage’
read per
if [  $mark -ge 20 -a $per -ge 75  ]
then
echo “You are allowed for semester”
else
echo “You are not allowed”
fi
```

Output:

```
vostro@studentiteradmin: ~/Desktop/2241018161/DOSass3
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Q7
Enter your internal mark
60
Enter your attendance percentage
77
You are allowed for semester
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$
```

Q8. Write a shell script small3 that will compare three numbers passed as command line arguments and display the smallest one.

Commands: -

```
if [ $1 -lt $2 -a $1 -lt $3 ]
then
echo " $1 is the smallest "
elif [ $2 -lt $3 -a $2 -lt $1 ]
then
echo " $2 is the smallest "
else
echo " $3 is the smallest"
fi
```

Output:

```
vostro@studentiteradmin: ~/Desktop/2241018161/DOSass3
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./small3 1 2 3
" 1 is the smallest "
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$
```

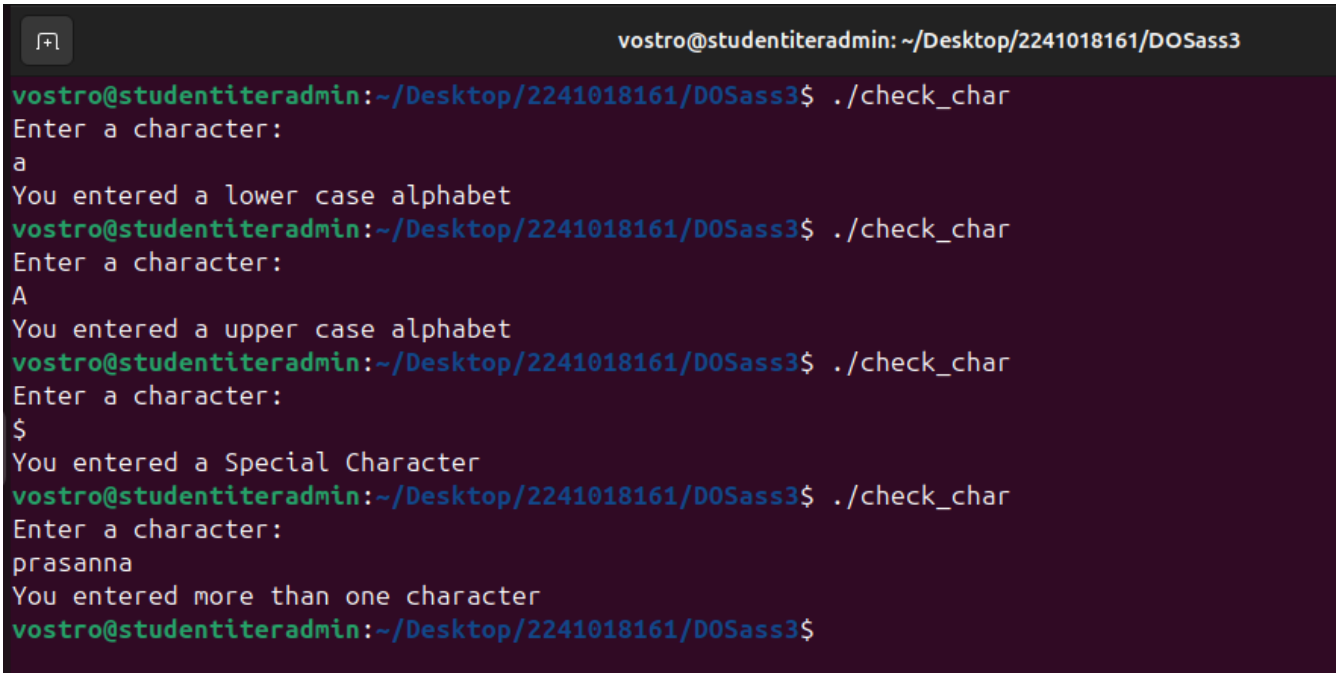
Q9. Write a shell script check_char which will display one message to enter a character and according to the character entered it will display appropriate message from the following options:

- **You entered a lower case alphabet**
- **You entered an upper case alphabet.**
- **You have entered a digit.**
- **You have entered a special symbol.**
- **You have entered more than one character.**

Commands:-

```
echo “Enter a character:”
read ch
case $ch in
[a-z]) echo “You entered a lower case alphabet”;;
[A-Z]) echo “You entered a upper case alphabet”;;
[1-9]) echo “You entered a Digit”;;
?)echo “You entered a Special Character”;;
*)echo “You entered more than one character”;;
esac
```

Output:

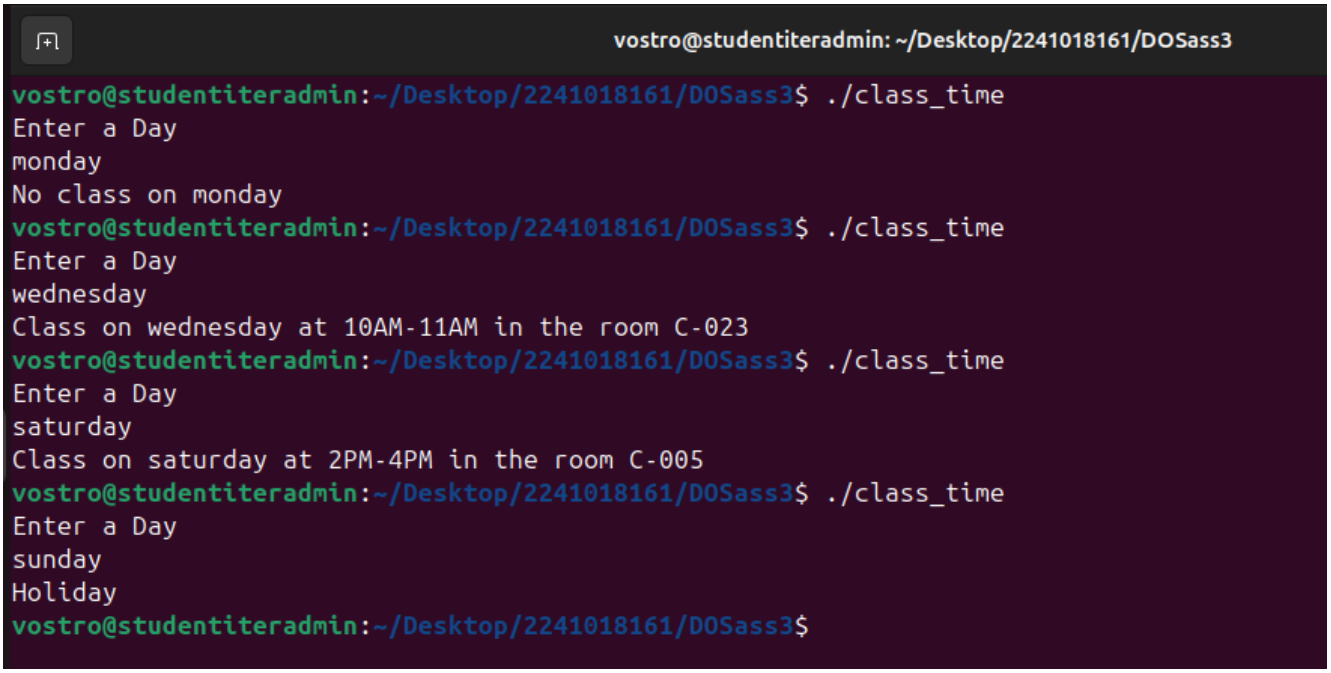


Q10. Write a shell script class_time which will display one message to enter a day and according to the day entered it will display the DOS class time along with the room information or the message “No class on day_name” or “Holiday” for Sunday.

Commands:-

```
echo “Enter a Day”
read day
case $day in
sunday) echo “Holiday”;;
monday) echo “No class on $day”;;
tuesday) echo “No class on $day”;;
wednessday) echo “Class on $day at 10Am-11Am in the room c-023”;;
thursday) echo “Class on $day at 5pm-6pm in the room c-023”;;
friday) echo “Class on $day at 3pm-4pm in the room c-023”;;
saturday) echo “Class on $day at 2pm-4pm in the room c-005”;;
*)echo “You entered wrong input”;;
esac
```

Output:



Q11. Write a shell script filechk that will take two file names as command line arguments, and check whether the content of two files are same or not . If contents of two files are same, then it will display the message: Files filename1 and filename2 have same content.

then delete the second file

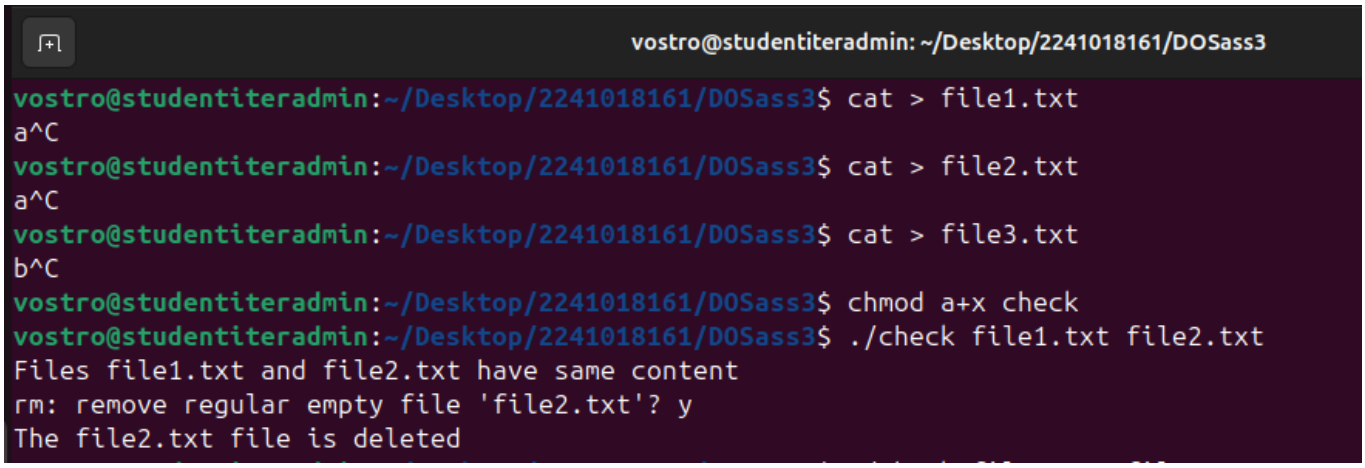
and display the message: So filename2 is deleted.

Otherwise display the message: Files filename1 and filename2 have different content.

Commands: -

```
if cmp -s $1 $2
then
echo “Files $1 and $2 have same content”
rm -i  “$2”
echo “The $2 file is deleted”
else
echo “Files $1 and $2 have different content”
fi
```

Output:



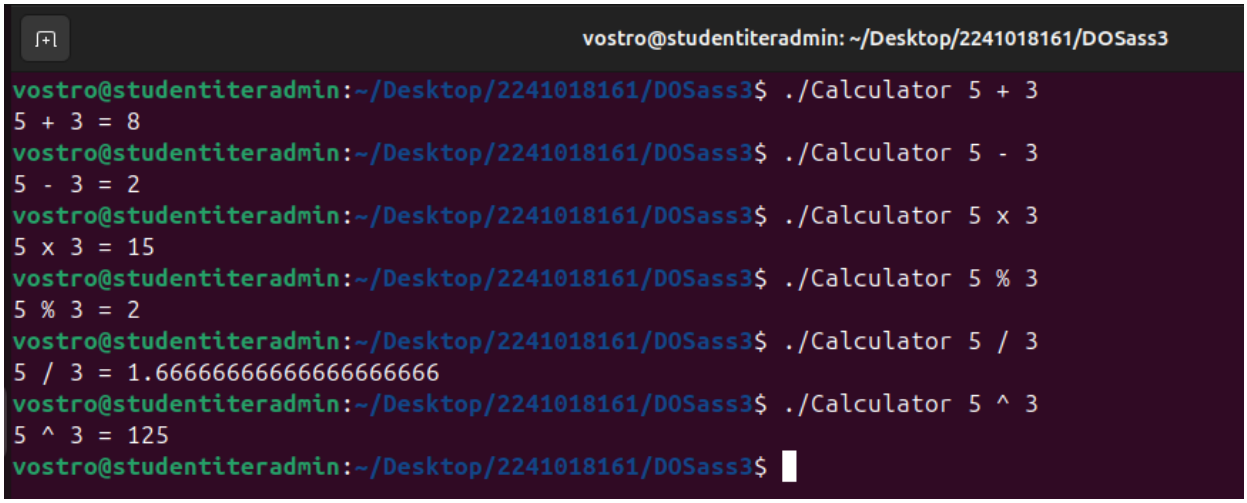
Q12. Write a shell script calculator that will take three command line arguments, where the first argument will specify the first operand, second argument will specify the operator and the third argument will specify the second operand and display the output of the arithmetic operation specified in the following format: op1 operator op2 = result.
If the arguments will be passed in any other sequence, it will display the message: "Invalid input "
Enter input in following format: op1 operator op2
The symbols to be used for different operators are as follows:

Addition:	**+**	**Subtraction:**	**-**
Multiplication:	*****	**Division:**	**/**
Modulo:	**%**	**Exponent:**	**^**

Commands: -

```
fir=$1
op =$2
sec=$3
case $op in
+) sum=$(echo "$fir + $sec" |bc)
echo "$fir $op $sec = $sum" ; ;
-) diff=$(echo "$fir - $sec" |bc)
echo "$fir $op $sec = $diff" ; ;
/) div=$(echo "$fir / $sec" |bc -l)
echo "$fir $op $sec = $div" ; ;
%) mod=$(echo "$fir % $sec" |bc)
echo "$fir $op $sec = $mod" ; ;
×) mul=$(echo "$fir * $sec" |bc)
echo "$fir $op $sec = $mul" ; ;
^) expo=$(echo "$fir ^ $sec" |bc)
echo "$fir $op $sec = $expo" ; ;
esac
```

Output:


vostro@studentiteradmin: ~/Desktop/2241018161/DOSass3
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Calculator 5 + 3
5 + 3 = 8
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Calculator 5 - 3
5 - 3 = 2
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Calculator 5 x 3
5 x 3 = 15
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Calculator 5 % 3
5 % 3 = 2
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Calculator 5 / 3
5 / 3 = 1.66666666666666666666
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$ ./Calculator 5 ^ 3
5 ^ 3 = 125
vostro@studentiteradmin:~/Desktop/2241018161/DOSass3$

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