|  |  |
| --- | --- |
|  | **Q.1)Write a C++ program to change the case (lower to upper and upper to lower cases) of each character of given string.**  Code: |
|  | #include <iostream> |
|  | #include <string> |
|  | #include <cctype> |
|  | using namespace std; |
|  |  |
|  | string change\_Case(string text) { |
|  |  |
|  | for (int x = 0; x < text.length(); x++) |
|  | { |
|  | if (isupper(text[x])) |
|  | { |
|  | text[x] = tolower(text[x]); |
|  | } |
|  | else |
|  | { |
|  | text[x] = toupper(text[x]); |
|  | } |
|  | } |
|  |  |
|  | return text; |
|  | } |
|  |  |
|  | int main() { |
|  |  |
|  | cout << "Original string: Python, After changing cases-> "<< change\_Case("Python") << endl; |
|  | cout << "Original string: w3resource, After changing cases-> "<< change\_Case("w3resource") << endl; |
|  | cout << "Original string: AbcdEFH Bkiuer, After changing cases-> "<< change\_Case(" AbcdEFH Bkiuer") << endl; |
|  | return 0; |
|  | } |

**Q.2) You are given a list of n-1 integers and these integers are in the ranfe of 1 to n.**

|  |  |
| --- | --- |
|  | **There are no duplicates in the list. One of the integers is missing in the list.** |
|  | **Write an efficient code to find the missing integer.** |
|  |  |
|  | Code: |
|  | #include <bits/stdc++.h> |
|  | using namespace std; |
|  |  |
|  | // Function to get the missing number |
|  | int missing\_number(int a[], int n) |
|  | { |
|  |  |
|  | int total = (n + 1) \* (n + 2) / 2; |
|  | for (int i = 0; i < n; i++) |
|  | total -= a[i]; |
|  | return total; |
|  | } |
|  |  |
|  | // Driver Code |
|  | int main() |
|  | { |
|  | int arr[] = { 1, 2, 4, 5, 6 }; |
|  | int n = sizeof(arr) / sizeof(arr[0]); |
|  | int miss = missing\_number(arr, n); |
|  | cout << miss; |
|  | } |

Q.3) C++ program for temperature converison using switch conditions only and use setprecision to display the output temperature.

1. convert given temperature of celcius to fahrenheit.

formula: fahrenheit=(celsius\*9.5)+32;

1. convert given fahrenheit to celcius.

formula: celcius = (fahrenheit-32)\*5/9;

========================================================================== Output-1:

1. Select to convert Celcius to Fahrenheit:
2. Select to convert Fahrenheit to Celcius:
3. Select to Exit:

# ===================================================== Enter your Choice: 1

# Enter the Temperature in Celcius: 37

Temperature in Fahrenheit is: 98.6

Output-2:

1. Select to convert Celcius to Fahrenheit:
2. Select to convert Fahrenheit to Celcius:
3. Select to Exit: ===================================================== Enter your Choice: 2 ===================================================== Enter the Temperature in Fahrenheit: 97.2 ===================================================== Temperature in Celcius is: 36.2

Output-3:

1. Select to convert Celcius to Fahrenheit:
2. Select to convert Fahrenheit to Celcius:
3. Select to Exit: ===================================================== Enter your Choice: 3 ===================================================== You Exited:

Output-4:

1. Select to convert Celcius to Fahrenheit:
2. Select to convert Fahrenheit to Celcius:
3. Select to Exit: ===================================================== Enter your Choice: 4 ===================================================== You have entered invalid Choice:

Solution:

#include <iostream>  
#include <string>  
#include <cctype>  
#include <cstring>  
#include <iomanip>  
  
using namespace std;  
  
int main()  
{  
  
cout<<"1. Select to convert Celcius to Fahrenheit: "<<endl;  
cout<<"2. Select to convert Fahrenheit to Celcius: "<<endl;  
cout<<"3. Select to Exit: "<<endl;  
cout<<"====================================================="<<endl;  
  
int choice;  
cout<<"Enter your Choice: ";  
cin>>choice;  
cout<<"====================================================="<<endl;  
  
switch(choice)  
{  
double celcius,fahrenheit;  
case 1:  
cout<<"Enter the Temperature in Celcius: ";  
cin>>celcius;  
fahrenheit = (celcius\*9/5)+32;  
cout<<fixed<<setprecision(1);  
cout<<"====================================================="<<endl;  
cout<<"Temperature in Fahrenheit is: "<<fahrenheit<<endl;  
break;  
  
case 2:  
cout<<"Enter the Temperature in Fahrenheit: ";  
cin>>fahrenheit;  
celcius = (fahrenheit-32)\*5/9;  
cout<<fixed<<setprecision(1);  
cout<<"====================================================="<<endl;  
cout<<"Temperature in Celcius is: "<<celcius<<endl;  
break;  
  
case 3:  
cout<<" You Exited:"<<endl;  
exit(0);  
  
default:  
cout<<"You have entered invalid Choice:";  
  
  
}  
  
  
return 0;

}

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Q.4)**Question: Write a program to copy a string to another string .**

**Note: 1.** Use pointers to write this code.

**Note: 2.** Use while loop only.

**Note: 3.** Program should copy an entrire sentence not only a word.

**Example:**

**Input 1** - Word

**Output 1** - Word

**Input 2** - This is a sentence.

**Output 2** - This is a sentence.

Solution:

#include<iostream>

#include<stdio.h>

using namespace std;

int main()

{

char strOrig[100], strCopy[100], i=0;

cout<<"Enter the string: ";

gets(strOrig);

while(strOrig[i]!='\0')

{

strCopy[i] = strOrig[i];

i++;

}

strCopy[i] = '\0';

cout<<strOrig<<endl;

cout<<strCopy<<endl;

cout<<endl;

return 0;

}

**Q.5) Given a maximum of 100 digit numbers as input, find the difference between the sum of odd and even position digits.**

Input 1:

4567

Expected output:

2

Explanation:

The Sum of odd position digits 4 and 6 is 10. The Sum of even position digits 5 and 7 is 12. The difference is 12-10=2.

Input #2:

9834698765123

Solution:

#include <iostream>

#include <string.h>

#include <stdlib.h>

using namespace std;

int main()

{

int num1 = 0,num2= 0,i = 0, n;

char num[100];

cin>> num;

n = strlen(num);

while(n>0)

{

if(i==0)

{

Num1+=num[n-1]-48;

n--;

i=1;

}

else

{

Num2+=num[n-1]-48;

n--;

i=0;

}

}

cout<< abs(a-b);

return 0;

}

**Q.6) C++ program to make simple calculator by using only if statement.**

Solution:

#include <iostream>

using namespace std;

int main(){

int a;

int b;

char mul;

char sub;

char dvd;

char add;

int value;

int sum;

cout<<"press 1 for mul ,2 for sub ,3 for dvd ,4 for add"<<endl;

cout<<"enter value"<<endl;

cin>>value;

if(value==1)

{

cout<<"enter value 1"<<endl;

cin>>a;

cout<<"enter value 1"<<endl;

cin>>b;

sum=a\*b;

cout<<sum<<endl;

}

if(value==2)

{

cout<<"enter value 1"<<endl;

cin>>a;

cout<<"enter value 1"<<endl;

cin>>b;

sum=a-b;

cout<<sum<<endl;

}

if(value==3)

{

cout<<"enter value 1"<<endl;

cin>>a;

cout<<"enter value 1"<<endl;

cin>>b;

sum=a/b;

cout<<sum<<endl;

}

if(value==4)

{

cout<<"enter value 1"<<endl;

cin>>a;

cout<<"enter value 1"<<endl;

cin>>b;

sum=a+b;

cout<<sum<<endl;

}

**Q.7)** The date July 10, 1970 is special because when we write it in the 7/10/70 format, the month times the day equals the year. Write a program that asks the user to enter a month( in numeric form ), a day and a two digit year. The program should determine whether the month times the day is equal to the year.

(i) If so, it should display a message saying date is UNIQUE

(ii) Otherwise it should display a message saying the date is NOT UNIQUE

Solution: #include <iostream>

using namespace std;

int main()

{

int day;

int month;

int year;

cout<<"enter year"<<endl;

cin>>year;

cout<<"enter day"<<endl;

cin>>day;

cout<<"enter month"<<endl;

cin>>month;

if(month\*day==year)

{

cout<<"Date is UNIQUE"<<year<<endl;

}

else

{

cout<<"Date is NOT UNIQUE"<<endl;

}

}

**Q.8)** One programming language has the following keywords that cannot be used as identifiers:

break, case, continue, default, defer, else, for, func, goto, if, map, range, return, struct, type, var

Write a program to find if the given word is a keyword or not

Input #1:

defer

Output:

defer is a keyword

Input #2:

While

**SOLUTION:**

#include<iostream>

#include<string.h>

using namespace std;

int main(){

char str[16][10] = {"break", "case", "continue", "default", "defer", "else","for",

"func", "goto", "if", "map", "range", "return", "struct", "type", "var"};

char input[20];

int flag = 0;

cin >> input;

for(int i = 0; i<16;i++){

if(strcmp(input,str[i]) == 0){

flag = 1;

break;

}

}

if(flag==1){

cout << input << " is a keyword";

}

else{

cout << input << " is not a keyword";

}

return 0;

}

**Q.9)** Sasken in its online written test have a coding question, wherein the students are given a string with multiple characters that are repeated consecutively. You’re supposed to reduce the size of this string using mathematical logic given as in the example below :

Input :

aabbbbeeeeffggg

Output:

a2b4e4f2g3

Solution:

#include <iostream>

using namespace std;

int main()

{

char str[100];

cin>> str;

int i, j, k=0, count = 0;

char str1[100];

for(i=0; str[i]!='\0'; i++)

{

count = 0;

for(j=0; j<=i; j++)

{

if(str[i]==str[j])

{

count++;

}

}

if(count==1)

{

str1[k] = str[i];

k++;

}

}

for(i=0; i<k; i++)

{

count = 0;

for(j=0; str[j]!='\0'; j++)

{

if(str1[i]==str[j]

)

{

count++;

}

}

if(count==1)

{

cout<< str1[i]<< endl;

}

else

{

cout<< str1[i] << count<< endl;

}

}

return 0;

}

**Q.10)** Write a C++ program that will display if a students is pass or not in his exam.

(50% or more is pass). If the student is Pass than your program should display

which letter the student has obtained.

?? 85% or more E for excellent

?? 75% or more but less than 85% O for Outstanding

?? 65% or more but less than 75% G for good

?? Less than 65% S for satisfactory

If however the student is Fail (below 50% marks) your program should display

1

whether the student should Resit or Redo depending on the following criteria.

?? 33% or more Resit in exam

?? Less than 33% Redo course\*/

Solution:

#include <iostream>

using namespace std;

int main()

{

int marks;

cout<<"enter marks "<<endl;

cin>>marks;

if(marks>=85)

{

cout<<"outstanding work "<<endl;

}

if(marks>=75 && marks<85)

{

cout<<"exellent work "<<endl;

}

if(marks>=65 && marks<75)

{

cout<<"average show "<<endl;

}

if(marks<=65 && marks>50)

{

cout<<"just/........ "<<endl;

}

if(marks<50 )

{

cout<<"bad show "<<endl;

if(marks<50 && (marks >=33))

{

cout<<"you can resit "<<endl;

}

else if(marks<33)

{

cout<<"redo please"<<endl;

}

}

}

**Q.11)**Problem Statement – An automobile company manufactures both a two wheeler (TW) and a four wheeler (FW). A company manager wants to make the production of both types of vehicle according to the given data below:

1st data, Total number of vehicle (two-wheeler + four-wheeler)=v

2nd data, Total number of wheels = W

The task is to find how many two-wheelers as well as four-wheelers need to manufacture as per the given data.

Example :

Input :

200 -> Value of V

540 -> Value of W

Output :

TW =130 FW=70

Explanation:

130+70 = 200 vehicles

(70\*4)+(130\*2)= 540 wheels

Constraints :

2<=W

W%2=0

V<W

Print “INVALID INPUT” , if inputs did not meet the constraints.

The input format for testing

The candidate has to write the code to accept two positive numbers separated by a new line.

First Input line – Accept value of V.

Second Input line- Accept value for W.

The output format for testing

Written program code should generate two outputs, each separated by a single space character(see the example)

Additional messages in the output will result in the failure of test case

**Solution**:

#include <bits/stdc++.h>

using namespace std;

int main ()

{

int v, w;

cin >> v >> w;

float x = ((4 \* v) - w) / 2;

if ((w & 1) || w < 2 || w <= v)

{

cout << "INVALID INPUT";

return 0;

}

cout << "TW=" << x << " " << "FW=" << v - x;

}

**Q.12)** Write a C++ program in which user enter their CET and PUC marks and your program will help student in selection of University. Based on these marks student will be allocated a seat at different department of different University.

University Name and Department Criteria

VTU University

IT: above 80% in CET and 70% in PUC

Computer Science Eng : above 70% in CET and 60% in PUC

Electronics & comm : above 70% in CET and 50% in PUC

Manipal University

IT: 70%-60% in CET and 50% in PUC

Civil Engg :59%-50% in CET and 50% in PUC

Mechanical Engg: Above 40% and below 50% in CET and 50% in PUC

Solution:

#include <iostream>  
using namespace std;  
int main()  
{  
int cet;  
int puc;  
  
  
cout<<"please enter your cet marks "<<endl;  
cin>>cet;  
cout<<"please enter your puc marks "<<endl;  
cin>>puc;  
  
  
if(cet>=80 && puc>=70 )  
{  
cout<<"you have got admission in VTU university IT branch"<<endl;  
}  
else if(cet>=70 && puc>=60 && puc<70)  
{  
cout<<"you have got admission in VTU Universty Computer science branch "<<endl;  
}  
else if(cet>=70 && puc>=50 && puc<60)  
{  
cout<<"you have got admission in VTU university Electronics and comm branch "<<endl;  
}  
  
if(cet<=70 && cet>=60 && puc>=50 )  
{  
cout<<"you have got admission in Manipal University IT branch"<<endl;  
}  
else if(cet<=59 && cet>=50 && puc>=50)  
{  
cout<<"you have got admission in Manipal University Civil engineering branch "<<endl;  
}  
else if(cet>=40 && cet<=50 && puc>=50)  
{  
cout<<"you have got admission in Manipal University Mechanical enginnering branch "<<endl;  
}  
}

#include <iostream>using namespace std;int main(){int cet;int puc;cout<<"please enter your cet marks "<<endl;cin>>cet;cout<<"please enter your puc marks "<<endl;cin>>puc;if(cet>=80 && puc>=70 ){cout<<"you have got admission in VTU university IT branch"<<endl;}else if(cet>=70 && puc>=60 && puc<70){cout<<"you have got admission in VTU Universty Computer science branch "<<endl;}

#include <iostream>using namespace std;int main(){int cet;int puc;cout<<"please enter your cet marks "<<endl;cin>>cet;cout<<"please enter your puc marks "<<endl;cin>>puc;if(cet>=80 && puc>=70 ){cout<<"you have got admission in VTU university IT branch"<<endl;}else if(cet>=70 && puc>=60 && puc<70){cout<<"you have got admission in VTU Universty Computer science branch "<<endl;}

**Q.13)Write C++ program to determine the Area and Perimeter of a Rectangle .**

#include<iostream>

using namespace std;

int main()

{

int width,height,area,perimeter;

cout<<"Enter Width of Rectangle = ";

cin>>width;

cout<<"Enter Height of Rectangle = ";

cin>>height;

area=height\*width;

cout<<"Area of Rectangle ="<<area<<endl;

perimeter=2\*(height+width);

cout<<" Perimeter of rectangle are = "<<perimeter<<endl;

return 0;

}