**Roll:S008 Name:M.Rayyan BsCs 1st SS1**

/\* Q 1. Write a program which asks the user to input a no if user enters a negative no the program should output/print an error and exit.

\*/

#include<iostream>

#include<stdlib.h>

using namespace std;

int main()

{

float no;

cout<<"No: ";

cin>>no;

if(no<0)

{

cout<<"Error"<<endl;

exit(0);

}

cout<<no;

cout<<"\nThe No is Possitive.";

return 0;

}

/\* Q 3. Write a program that inputs name and 3 subject’s marks(type int) from the user,

calculate marks average (float) if average is greater then and equal to 80 then program

display message you are outstanding.

\*/

#include<iostream>

using namespace std;

int main()

{

string name;

cout<<"Name: ";

cin>>name;

int subj1,subj2,subj3;

cout<<"English: ";

cin>>subj1;

cout<<"Maths: ";

cin>>subj2;

cout<<"Physics: ";

cin>>subj3;

float avg = (subj1+subj2+subj3)/3.0f; //.0f or take subjects as floats

cout<<"Average: "<<avg<<endl;

if(avg>=80)

cout<<"You are Outstanding"<<endl;

cout<<"Congragulations \n You Passed";

return 0;

}

/\* Q 5. Write a program which asks the user to input 3 numbers now determine

which number is greater and print the result.(using if statement)

\*/

#include<iostream>

using namespace std;

int main()

{

int no1,no2,no3;

cout<<"Input No1, No2, No3 ";

cin>>no1>>no2>>no3;

if(no1>no2 && no1>no3)

cout<<no1<<" is greater.";

else if(no2>no1 && no2>no3)

cout<<no2<<" is greater.";

else

cout<<no3<<" is greater.";

return 0;

}

/\* Q 6. Write a program that input a year from the user and display the entered year is a Leap year or not.

\*/

#include<iostream>

using namespace std;

int main()

{

int year;

cout<<"Input Year: ";

cin>>year;

int remainder = year % 4;

if(remainder == 0) //equal ==

cout<<"It is a leap year.";

else // dont write condition here (wrong)

cout<<"It is not a leap year.";

return 0;

}

/\* Q 11. Program to check whether a given number is Armstrong number or not.

For example, 371 is an Armstrong number, since 3\*3\*3 + 7\*7\*7 + 1\*1\*1 = 371.

\*/

#include<iostream>

#include<math.h>

using namespace std;

int main()

{

int no;

cout<<"input No: ";

cin>>no;

int digit1 = no % 10;

int no2 = no/10;

int digit2 = no2 % 10;

int no3 = no2/10;

int digit3 = no3 % 10;

int no4 = no3/10;

int digit4 = no4 % 10;

int result = pow(digit1,4) + pow(digit2,4) + pow(digit3,4) + pow(digit4,4); //for 4 digits

if(result == no)

cout<<"It is an armstrong number.";

else

cout<<"It is not an armstrong number.";

return 0;

}

/\* Q 12. Write a program to check whether a triangle is valid or not

, when the three angles of the triangle are entered by the user. A triangle

is valid if the sum of all the three angles is equal to 180 degrees

\*/

#include<iostream>

using namespace std;

int main()

{

float A,B,C;

cout<<"Input angle A: ";

cin>>A;

cout<<"input angle B: ";

cin>>B;

cout<<"Input angle C: ";

cin>>C;

if(A+B+C==180)

cout<<"It is valid.";

else

cout<<"It is not valid.";3

return 0;

}

/\* Q 13.Write a program to determine whether the seller has made profit or incurred loss.

Also determine how much profit he made or loss he incurred. Cost price and selling price of an item is input by the user.

\*/

#include<iostream>

using namespace std;

int main()

{

int cost,sale,differ;

cout<<"Cost Price: ";

cin>>cost;

cout<<"Sale Price: ";

cin>>sale;

differ = sale - cost;

if(differ>0)

{

cout<<"Incurred Profit of "<<differ<<endl;

}

else

cout<<"Incured Loss of "<<abs(differ);

return 0;

}

/\* Q 14. Write a program that inputs salary and grade.

It adds 70% bonus if the grade is greater than 17.it adds

25% bonus if the grade is 17 or less and then display the total salary.

\*/

#include<iostream>

using namespace std;

int main()

{

int salary, grade;

cout<<"salary: ";

cin>>salary;

cout<<"Grade: ";

cin>>grade;

if(grade>17)

{

float bonus = 0.7\*salary;

cout<<"Bonus recieved is "<<bonus<<endl;

float total = salary + bonus;

cout<<"Total salary is "<<total;

}

else

{

float bonus = 0.25\*salary;

cout<<"Bonus recieved is "<<bonus<<endl;

float total = bonus + salary;

cout<<"Total salary is "<<total;

}

return 0;

}

/\* Q 15. Write a C++ program to input any character and check whether it is alphabet, digit or special character.

\*/

#include<iostream>

using namespace std;

int main()

{

char a;

cout<<"Input character: ";

cin>>a;

if(isdigit(a))

cout<<"It is a digit.";

else if(isalpha(a))

cout<<"It is a character.";

else

cout<<"It is speacial character.";

return 0;

}

/\* Q 17. Write a program that contains an if statement that

may be used to compute the area of a square (area = side \* side)

or a triangle (area = \* base \* height) after prompting the user to

type the first character of the figure name (S or T).

\*/

#include<iostream>

using namespace std;

int main()

{

char a;

cout<<"Required Area of triangle or square? "<<"\nInput as 'T' or 'S': ";

cin>>a;

if(a == 'S')

{

float side1;

cout<<"Length of any side: ";

cin>>side1;

float area = side1 \* side1;

cout<<"Area of square is "<<area<<endl;

}

/\* else this

cout<<"Square was not defined in input."<<endl;

if(a == 'T')

{

float base,height;

cout<<"Base: ";

cin>>base;

cout<<"Height: ";

cin>>height;

float area = 0.5 \* base \* height;

cout<<"Area of triange is "<<area<<endl;

}

else

cout<<"Triangle was not defined in input.";

\*/

else if(a == 'T')

{

float base,height; //or this

cout<<"Base: ";

cin>>base;

cout<<"Height: ";

cin>>height;

float area = 0.5 \* base \* height;

cout<<"Area of triange is "<<area<<endl;

}

else

cout<<"Invalid Input!";

/\* if(a == 'T') //or this

{

float base,height;

cout<<"Base: ";

cin>>base;

cout<<"Height: ";

cin>>height;

float area = 0.5 \* base \* height;

cout<<"Area of triange is "<<area<<endl;

}

if(a!='T' && a!='S' )

cout<<"invalid";

\*/

return 0;

}

/\* Q 19. Write a C program to input basic salary of an employee and calculate its Gross salary according to following:

• Basic Salary <= 10000 : HRA = 20%, DA = 80%

• Basic Salary <= 20000 : HRA = 25%, DA = 90%

• Basic Salary > 20000 : HRA = 30%, DA = 95%

\*/

#include<iostream>

using namespace std;

int main()

{

int salary;

cout<<"Basic salary: ";

cin>>salary;

float gross,hra,da;

if(salary <= 10000)

gross = 0.2\*salary + 0.8\*salary + salary;

else if(salary<=20000)

gross = 0.25\*salary + 0.9\*salary + salary;

else

gross = 0.3\*salary + 0.95\*salary + salary;

cout<<"Gross is "<<gross;

return 0;

}

/\*Q20 vowel or consonent

\*/

#include<iostream>

using namespace std;

int main()

{

char a;

cout<<"input character: ";

cin>>a;

if(!isalpha(a))

cout<<"isnt alphabet";

else if(a=='a'||a=='A'||a=='e'||a=='E'||a=='i'||a=='I'||a=='o'||a=='O'||a=='u'||a=='U') //or seperate upper lower case

cout<<"is vowel.";

else

cout<<"is consonant.";

return 0;

}

/\* Q 21. Write a program to calculate the monthly telephone bills as per the following rule:

• Minimum Rs. 200 for upto 100 calls.

• Plus Rs. 0.60 per call for next 50 calls.

• Plus Rs. 0.50 per call for next 50 calls.

• Plus Rs. 0.40 per call for any call beyond 200 calls.

\*/

#include<iostream>

using namespace std;

int main()

{

float bill;

int calls;

cout<<"No of calls: ";

cin>>calls;

if(calls<=100)

bill = 200;

else if(calls>100 && calls<=150)

bill = 200 + 0.60\*(calls-100);

else if(calls>150 && calls<=200)

bill = 200 + 0.60\*(50) + 0.50\*(calls-150);

else

bill = 200 + 0.60\*(50) + 0.50\*(50) + 0.40\*(calls-200);

cout<<"Telephone bill is "<<bill<<endl;

return 0;

}

/\* Q 22. Write a program that determines a student’s grade. The program will read three types of scores

(quiz, mid-term, and final scores) and determine the grade based on the following rules:

• if the average score =90% =>grade=A

• if the average score >= 70% and <90% => grade=B

• if the average score>=50% and <70% =>grade=C

• if the average score<50% =>grade=F

\*/

#include<iostream>

using namespace std;

int main()

{

float quiz,mids,finals,average;

cout<<"Marks in quiz: ";

cin>>quiz;

cout<<"Marks in mids: ";

cin>>mids;

cout<<"Marks in finals: ";

cin>>finals;

average = (quiz+mids+finals)/300\*100;

//cout<<average<<endl;

if(average==90)

cout<<"Passed with Grade A";

else if(average>=70 && average<90)

cout<<"Passed with Grade B";

else if(average>=50 && average<70)

cout<<"Passed with Grade C";

else

cout<<"Failed.";

return 0;

}

/\* Q 24. Write a program that calculates the electricity bill. The rate of electricity per unit as follows.

• If the units consumed are <=100, then the cost is Rs. 5.5/- per unit.

• If the units consumed are <100 and <=250, then the cost is Rs. 7.5/- per unit.

• If the units consumed exceed <250, then the cost is Rs. 10.5/- per unit.

A line rent Rs. 50 is also added to the bill and surcharge of 7% extra if the bill exceeded Rs. 1500/-.calculate the total bill.

\*/

#include<iostream>

using namespace std;

int main()

{

int units;

cout<<"Input Units Consumed: ";

cin>>units;

float bill,total;

if(units<=100)

{

cout<<"Cost per unit = Rs5.5"<<endl;

cout<<"Line rent = Rs50"<<endl;

bill = 5.5\*units + 50;

cout<<"Total Bill is"<<bill<<endl;

}

else if(units<100 && units>=250)

{

cout<<"Cost per unit = Rs7.5"<<endl;

cout<<"Line rent = Rs50"<<endl;

bill = 7.5\*units + 50;

cout<<"Total Bill is"<<bill<<endl;

}

else

{

cout<<"Cost per unit = Rs10.5"<<endl;

cout<<"Line rent = Rs50"<<endl;

bill = 10.5\*units + 50;

cout<<"Total Bill is"<<bill<<endl;

}

if(bill>1500)

{

total = 0.7\*bill + bill;

cout<<"Bill after surcharge is "<<total;

}

return 0;

}

/\* Q 25. Write a program that displays the following menu for a parking area.

• Enter B for Bike

• Enter C for car

• Enter T for truck

The program inputs the type of vehicle and number of days to park the vehicle. It finally displays the total charges for the parking according to the following.

• Bike Rs. 300/- per day

• Car Rs. 5000/- per day

• Truck Rs. 10000/- per day

\*/

#include<iostream>

using namespace std;

int main()

{

char vehicle;

cout<<"Vehicle Type "<<"\nInput as B/C/T: ";

cin>>vehicle;

int days,charges;

cout<<"Number of Days: ";

cin>>days;

if(vehicle == 'B')

charges = 300\*days;

else if(vehicle == 'C')

charges = 5000\*days;

else if(vehicle == 'T')

charges = 10000\*days;

else

cout<<"Invalid Entry!"<<endl;

cout<<"Total Parking Charges: "<<charges;

return 0;

}

/\* Q 26. Any character is entered by the user; write a program to determine whether the character entered

is a capital letter, a small case letter, a digit or a special symbol. The following table shows the range of

ASCII values for various characters.

Characters ASCII Values

A – Z 65 – 90

a – z 97 – 122

0 – 9 48 – 57

special symbols 0 - 47, 58 - 64, 91 - 96, 123 – 127

\*/

#include<iostream>

using namespace std;

int main()

{

char ch;

cout<<"Input character: ";

cin>>ch;

if(ch>64 && ch<91)

cout<<"Upper case alphabet.";

if(ch>96 && ch<123)

cout<<"Lowe case alphabet.";

if(ch>47 && ch<58)

cout<<"Digit";

if(ch>=0 && ch<48)

cout<<"special letters";

if(ch>57 && ch<65)

cout<<"special letters";

if(ch>90 && ch<97)

cout<<"special letters";

if(ch>122 && ch<128)

cout<<"special letters";

return 0;

}

/\* Q 26. Any character is entered by the user;

write a program to determine whether the character entered is

a capital letter, a small case letter, a digit or a special symbol.

\*/

#include<iostream>

using namespace std;

int main()

{

char a;

cout<<"Input a character: ";

cin>>a;

if(isalpha(a))

{

cout<<"Alphabet";

if(isupper(a))

cout<<" Upper case";

else

cout<<" Lower case";

}

else if(isdigit(a))

cout<<"Digit";

else

cout<<"Special letter";

return 0;

}