/\*

Q1) Find greatest among two entered numbers.

\*/

#include <stdio.h>

int main() {

int a, b;

printf("Enter two numbers: ");

scanf("%d %d", &a, &b);

if (a > b)

printf("%d is greater\n", a);

else if (b > a)

printf("%d is greater\n", b);

else

printf("Both are equal\n");

return 0;

}

/\*

Q2) Check whether an entered number is even or odd.

\*/

#include <stdio.h>

int main() {

int n;

printf("Enter a number: ");

scanf("%d", &n);

if (n % 2 == 0)

printf("%d is Even\n", n);

else

printf("%d is Odd\n", n);

return 0;

}/\*

Q3) Check whether an entered character is a vowel or not.

\*/

#include <stdio.h>

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch);

if (ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u'||

ch=='A'||ch=='E'||ch=='I'||ch=='O'||ch=='U')

printf("%c is a Vowel\n", ch);

else

printf("%c is not a Vowel\n", ch);

return 0;

}

/\*

Q4) Check whether an entered number is divisible by 3 and 5.

\*/

#include <stdio.h>

int main() {

int n;

printf("Enter a number: ");

scanf("%d", &n);

if (n % 3 == 0 && n % 5 == 0)

printf("%d is divisible by 3 and 5\n", n);

else

printf("%d is not divisible by both 3 and 5\n", n);

return 0;

}

**/\***

**Q5) Check whether an entered year is a leap year or not.**

**\*/**

**#include <stdio.h>**

**int main() {**

**int year;**

**printf("Enter a year: ");**

**scanf("%d", &year);**

**if ((year % 400 == 0) || (year % 4 == 0 && year % 100 != 0))**

**printf("%d is a Leap Year\n", year);**

**else**

**printf("%d is not a Leap Year\n", year);**

**return 0;**

**}**

/\*

Q6) Check whether any entered number is positive, negative or zero using nested if-else statement.

\*/

#include <stdio.h>

int main() {

int n;

printf("Enter a number: ");

scanf("%d", &n);

if (n >= 0) {

if (n == 0)

printf("The number is Zero\n");

else

printf("The number is Positive\n");

} else {

printf("The number is Negative\n");

}

return 0;

}

/\*

Q7) Check whether two entered numbers are equal or the first number is greater than

the second number or the second number is greater than the first number using nested if-else statement.

\*/

#include <stdio.h>

int main() {

int a, b;

printf("Enter two numbers: ");

scanf("%d %d", &a, &b);

if (a == b)

printf("Both numbers are equal\n");

else {

if (a > b)

printf("First number %d is greater\n", a);

else

printf("Second number %d is greater\n", b);

}

return 0;

}

/\*

Q8) Find greatest among 3 entered numbers using nested if-else statement.

\*/

#include <stdio.h>

int main() {

int a, b, c;

printf("Enter three numbers: ");

scanf("%d %d %d", &a, &b, &c);

if (a > b) {

if (a > c)

printf("%d is greatest\n", a);

else

printf("%d is greatest\n", c);

} else {

if (b > c)

printf("%d is greatest\n", b);

else

printf("%d is greatest\n", c);

}

return 0;

}

/\*

Q9) Find smallest among three entered numbers using else if ladder.

Use logical AND operator to combine multiple conditions.

\*/

#include <stdio.h>

int main() {

int a, b, c;

printf("Enter three numbers: ");

scanf("%d %d %d", &a, &b, &c);

if (a <= b && a <= c)

printf("Smallest = %d\n", a);

else if (b <= a && b <= c)

printf("Smallest = %d\n", b);

else

printf("Smallest = %d\n", c);

return 0;

}

/\*

Q10) Enter mark obtained by a student in a subject and print the respective grade using else-if ladder

statement. Consider the following grading system:

90–100 : O

80–89 : E

70–79 : A

60–69 : B

50–59 : C

40–49 : D

Less than 40 or Absent: U

\*/

#include <stdio.h>

int main() {

int marks;

printf("Enter marks (0-100): ");

scanf("%d", &marks);

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

printf("Grade: O\n");

else if (marks >= 80)

printf("Grade: E\n");

else if (marks >= 70)

printf("Grade: A\n");

else if (marks >= 60)

printf("Grade: B\n");

else if (marks >= 50)

printf("Grade: C\n");

else if (marks >= 40)

printf("Grade: D\n");

else

printf("Grade: U\n");

return 0;

}  
/\*

Q11) Enter the cost price and selling price of a product and check profit or loss.

Also, print the percentage of loss or profit for the product.

\*/

#include <stdio.h>

int main() {

float cp, sp, profit, loss;

printf("Enter cost price and selling price: ");

scanf("%f %f", &cp, &sp);

if (sp > cp) {

profit = sp - cp;

printf("Profit = %.2f\n", profit);

printf("Profit Percentage = %.2f%%\n", (profit/cp)\*100);

} else if (cp > sp) {

loss = cp - sp;

printf("Loss = %.2f\n", loss);

printf("Loss Percentage = %.2f%%\n", (loss/cp)\*100);

} else {

printf("No Profit No Loss\n");

}

return 0;

}

/\*

Q12) Compute the real roots of a quadratic equation ax^2 + bx + c = 0 (given a, b and c)

for the following conditions:

i) No solution, if both a and b are zero.

ii) Only one root if determinant (b^2 - 4ac)=0

iii) No real roots if b^2 - 4ac < 0

iv) Otherwise there are 2 real roots

\*/

#include <stdio.h>

#include <math.h>

int main() {

float a, b, c, d, r1, r2;

printf("Enter a, b, c: ");

scanf("%f %f %f", &a, &b, &c);

if (a == 0 && b == 0) {

printf("No solution\n");

} else {

d = b\*b - 4\*a\*c;

if (d == 0) {

r1 = -b / (2\*a);

printf("One root: %.2f\n", r1);

} else if (d < 0) {

printf("No real roots\n");

} else {

r1 = (-b + sqrt(d)) / (2\*a);

r2 = (-b - sqrt(d)) / (2\*a);

printf("Roots: %.2f and %.2f\n", r1, r2);

}

}

return 0;

}

/\*

Q13) Calculate the income tax payable by a person by entering the total taxable income as per the

below slabs:

0–3,00,000 : 0%

3,00,001–7,00,000 : 5%

7,00,001–10,00,000 : 10%

10,00,001–12,00,000 : 15%

12,00,001–15,00,000 : 20%

>15,00,000 : 30%

\*/

#include <stdio.h>

int main() {

float income, tax = 0;

printf("Enter taxable income: ");

scanf("%f", &income);

if (income <= 300000)

tax = 0;

else if (income <= 700000)

tax = 0.05 \* (income - 300000);

else if (income <= 1000000)

tax = 0.05 \* 400000 + 0.10 \* (income - 700000);

else if (income <= 1200000)

tax = 0.05 \* 400000 + 0.10 \* 300000 + 0.15 \* (income - 1000000);

else if (income <= 1500000)

tax = 0.05 \* 400000 + 0.10 \* 300000 + 0.15 \* 200000 + 0.20 \* (income - 1200000);

else

tax = 0.05 \* 400000 + 0.10 \* 300000 + 0.15 \* 200000 + 0.20 \* 300000 + 0.30 \* (income - 1500000);

printf("Income Tax Payable = %.2f\n", tax);

return 0;

}

/\*

Q14) Calculate the age of a person, given date of birth (DOB) and current date (CD).

A date is represented as three integers (say dd, mm, and yyyy).

The result to be printed as YY years, MM months, DD days.

Consider a month consists of 30 days.

Example: Input DOB: 29/10/1980, CD: 27/8/2011

Output: Age: 30 years 9 Months and 28 days

\*/

#include <stdio.h>

int main() {

int d1, m1, y1; // DOB

int d2, m2, y2; // Current Date

int dd, mm, yy;

printf("Enter Date of Birth (dd mm yyyy): ");

scanf("%d %d %d", &d1, &m1, &y1);

printf("Enter Current Date (dd mm yyyy): ");

scanf("%d %d %d", &d2, &m2, &y2);

if (d2 < d1) {

d2 += 30;

m2 -= 1;

}

dd = d2 - d1;

if (m2 < m1) {

m2 += 12;

y2 -= 1;

}

mm = m2 - m1;

yy = y2 - y1;

printf("Age: %d years %d months %d days\n", yy, mm, dd);

return 0;

}

/\*

Q15) Enter the total purchase amount for a customer and calculate the amount payable by the customer

after discount, if a shopping mall announced the following discounts:

<1000 : No discount

1000–3000 : 5%

3001–6000 : 7%

6001–10000 : 10%

Above 10000 : Flat Rs. 2000 off

\*/

#include <stdio.h>

int main() {

float amt, final;

printf("Enter purchase amount: ");

scanf("%f", &amt);

if (amt < 1000)

final = amt;

else if (amt <= 3000)

final = amt - (0.05 \* amt);

else if (amt <= 6000)

final = amt - (0.07 \* amt);

else if (amt <= 10000)

final = amt - (0.10 \* amt);

else

final = amt - 2000;

printf("Final Amount Payable = %.2f\n", final);

return 0;

}

/\*

Q16) Enter the previous month and current month meter reading.

Calculate the electric bill amount for any customer as per rules:

First 100 units : Rs 3.20 per unit

Next 200 units : Rs 5.40 per unit

Remaining units : Rs 6 per unit

\*/

#include <stdio.h>

int main() {

int prev, curr, units;

float bill = 0;

printf("Enter previous and current meter reading: ");

scanf("%d %d", &prev, &curr);

units = curr - prev;

if (units <= 100)

bill = units \* 3.20;

else if (units <= 300)

bill = 100 \* 3.20 + (units - 100) \* 5.40;

else

bill = 100 \* 3.20 + 200 \* 5.40 + (units - 300) \* 6.0;

printf("Total Bill = Rs %.2f\n", bill);

return 0;

}

/\*

Q17) Find the absolute value of a number entered through the keyboard using conditional operator.

\*/

#include <stdio.h>

int main() {

int n, abs;

printf("Enter a number: ");

scanf("%d", &n);

abs = (n < 0) ? -n : n;

printf("Absolute value = %d\n", abs);

return 0;

}

/\*

Q18) Given the coordinates (x, y) of a center of a circle and its radius,

write a program which will determine whether a point lies inside the circle,

on the circle or outside the circle.

\*/

#include <stdio.h>

#include <math.h>

int main() {

float cx, cy, r, x, y, dist;

printf("Enter circle center (x y) and radius: ");

scanf("%f %f %f", &cx, &cy, &r);

printf("Enter point coordinates (x y): ");

scanf("%f %f", &x, &y);

dist = sqrt(pow(x - cx, 2) + pow(y - cy, 2));

if (dist < r)

printf("Point lies inside the circle\n");

else if (dist == r)

printf("Point lies on the circle\n");

else

printf("Point lies outside the circle\n");

return 0;

}

/\*

Q19) If the three sides of a triangle are entered through the keyboard,

write a program to check whether the triangle is valid or not using conditional operator.

\*/

#include <stdio.h>

int main() {

int a, b, c;

printf("Enter three sides of triangle: ");

scanf("%d %d %d", &a, &b, &c);

(a + b > c && a + c > b && b + c > a)

? printf("Valid Triangle\n")

: printf("Invalid Triangle\n");

return 0;

}

/\*

Q20) If the three sides of a triangle are entered through the keyboard,

write a program to check whether the triangle is isosceles using conditional operator.

\*/

#include <stdio.h>

int main() {

int a, b, c;

printf("Enter three sides of triangle: ");

scanf("%d %d %d", &a, &b, &c);

(a == b || b == c || a == c)

? printf("Triangle is Isosceles\n")

: printf("Triangle is not Isosceles\n");

return 0;

}

/\*

Q21) If the three sides of a triangle are entered through the keyboard,

write a program to check whether the triangle is equilateral using conditional operator.

\*/

#include <stdio.h>

int main() {

int a, b, c;

printf("Enter three sides of triangle: ");

scanf("%d %d %d", &a, &b, &c);

(a == b && b == c)

? printf("Triangle is Equilateral\n")

: printf("Triangle is not Equilateral\n");

return 0;

}

/\*

Q22) If the three sides of a triangle are entered through the keyboard,

write a program to check whether the triangle is right-angled using conditional operator.

\*/

#include <stdio.h>

int main() {

int a, b, c, max, sumSquares;

printf("Enter three sides of triangle: ");

scanf("%d %d %d", &a, &b, &c);

max = (a>b && a>c) ? a : ((b>c) ? b : c);

sumSquares = (max==a) ? (b\*b + c\*c) : (max==b ? (a\*a + c\*c) : (a\*a + b\*b));

(max\*max == sumSquares)

? printf("Triangle is Right-angled\n")

: printf("Triangle is not Right-angled\n");

return 0;

}

/\*

Q23) If the three sides of a triangle are entered through the keyboard,

write a program to check whether the triangle is scalene using conditional operator.

\*/

#include <stdio.h>

int main() {

int a, b, c;

printf("Enter three sides of triangle: ");

scanf("%d %d %d", &a, &b, &c);

(a!=b && b!=c && a!=c)

? printf("Triangle is Scalene\n")

: printf("Triangle is not Scalene\n");

return 0;

}

/\*

Q24) Write a program to enter coordinates of a point and check whether the point lies in the 1st, 2nd, 3rd, 4th quadrant or on the axis.

\*/

#include <stdio.h>

int main() {

int x, y;

printf("Enter coordinates (x y): ");

scanf("%d %d", &x, &y);

(x>0 && y>0) ? printf("1st Quadrant\n") :

(x<0 && y>0) ? printf("2nd Quadrant\n") :

(x<0 && y<0) ? printf("3rd Quadrant\n") :

(x>0 && y<0) ? printf("4th Quadrant\n") :

(x==0 && y==0) ? printf("Origin\n") :

(x==0) ? printf("Lies on Y-axis\n") : printf("Lies on X-axis\n");

return 0;

}

/\*

Q25) Write a program to enter three sides of a triangle and check if the triangle is valid or not.

If valid, check whether it is isosceles, scalene, equilateral, or right-angled.

\*/

#include <stdio.h>

int main() {

int a, b, c, max, sumSquares;

printf("Enter three sides of triangle: ");

scanf("%d %d %d", &a, &b, &c);

(a+b>c && b+c>a && a+c>b)

? ((a==b && b==c)

? printf("Triangle is Equilateral\n")

: (a==b || b==c || a==c)

? printf("Triangle is Isosceles\n")

: printf("Triangle is Scalene\n"))

: printf("Triangle is not valid\n");

max = (a>b && a>c) ? a : ((b>c) ? b : c);

sumSquares = (max==a) ? (b\*b + c\*c) : (max==b ? (a\*a + c\*c) : (a\*a + b\*b));

(max\*max == sumSquares) ? printf("Right-angled triangle\n") : printf("");

return 0;

}

/\*

Q26) Write a program to enter a character and determine whether the character is

lowercase alphabet, uppercase alphabet, digit, or special character.

\*/

#include <stdio.h>

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch);

(ch>='a' && ch<='z') ? printf("Lower case alphabet\n") :

(ch>='A' && ch<='Z') ? printf("Upper case alphabet\n") :

(ch>='0' && ch<='9') ? printf("Digit\n") : printf("Special character\n");

return 0;

}

/\*

Q27) Write a program to enter a character and check whether it is a vowel or consonant.

\*/

#include <stdio.h>

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch);

((ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u'||ch=='A'||ch=='E'||ch=='I'||ch=='O'||ch=='U')

? printf("Vowel\n")

: ((ch>='a' && ch<='z') || (ch>='A' && ch<='Z'))

? printf("Consonant\n")

: printf("Not an alphabet\n"));

return 0;

}

/\*

Q28) Write a program to enter a character and if it is an alphabet, change its case.

\*/

#include <stdio.h>

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch);

(ch>='a' && ch<='z') ? printf("Upper case: %c\n", ch-32) :

(ch>='A' && ch<='Z') ? printf("Lower case: %c\n", ch+32) :

printf("Not an alphabet\n");

return 0;

}

/\*

Q29) Given a number between 1 to 7, print the day name (Monday-Sunday) using switch-case.

\*/

#include <stdio.h>

int main() {

int day;

printf("Enter day number (1-7): ");

scanf("%d", &day);

switch(day){

case 1: printf("Monday\n"); break;

case 2: printf("Tuesday\n"); break;

case 3: printf("Wednesday\n"); break;

case 4: printf("Thursday\n"); break;

case 5: printf("Friday\n"); break;

case 6: printf("Saturday\n"); break;

case 7: printf("Sunday\n"); break;

default: printf("Invalid day number\n");

}

return 0;

}

/\*

Q30) Given a number 0-9, print the corresponding English word using switch-case.

\*/

#include <stdio.h>

int main() {

int num;

printf("Enter number (0-9): ");

scanf("%d", &num);

switch(num){

case 0: printf("Zero\n"); break;

case 1: printf("One\n"); break;

case 2: printf("Two\n"); break;

case 3: printf("Three\n"); break;

case 4: printf("Four\n"); break;

case 5: printf("Five\n"); break;

case 6: printf("Six\n"); break;

case 7: printf("Seven\n"); break;

case 8: printf("Eight\n"); break;

case 9: printf("Nine\n"); break;

default: printf("Invalid number\n");

}

return 0;

}

/\*

Q31) Check whether an entered character is a vowel or not using switch-case.

\*/

#include <stdio.h>

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch);

switch(ch){

case 'a': case 'e': case 'i': case 'o': case 'u':

case 'A': case 'E': case 'I': case 'O': case 'U':

printf("Vowel\n"); break;

default: printf("Not a vowel\n");

}

return 0;

}

/\*

Q32) Create a menu-driven program using switch-case that asks for two numbers and an operator (+,-,\*,/).

Prints the result or error message for invalid input.

\*/

#include <stdio.h>

int main() {

int a, b;

char op;

printf("Enter two numbers: ");

scanf("%d %d", &a, &b);

printf("Enter operator (+,-,\*,/): ");

scanf(" %c", &op);

switch(op){

case '+': printf("Result: %d\n", a+b); break;

case '-': printf("Result: %d\n", a-b); break;

case '\*': printf("Result: %d\n", a\*b); break;

case '/': (b!=0) ? printf("Result: %d\n", a/b) : printf("Division by zero error\n"); break;

default: printf("Invalid operator\n");

}

return 0;

}

/\*

Q33) Calculate parking charges of a vehicle. Enter vehicle type (H/L) and number of hours.

Charges: Heavy H: Rs20/first 5h, Rs40/beyond 5h. Light L: Rs10/first 3h, Rs30/beyond 3h.

\*/

#include <stdio.h>

int main() {

char type;

int hours, charges;

printf("Enter vehicle type (H/L): ");

scanf(" %c", &type);

printf("Enter number of hours: ");

scanf("%d", &hours);

charges = (type=='H') ? ((hours<=5)? hours\*20 : 5\*20 + (hours-5)\*40) :

(type=='L') ? ((hours<=3)? hours\*10 : 3\*10 + (hours-3)\*30) : -1;

(charges==-1) ? printf("Invalid vehicle type\n") : printf("Parking charges: Rs %d\n", charges);

return 0;

}