CMR Engineering College

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2022-26_I_CS_B_C Programming Lab

C PROGRAMMING LAB_EXERCISE_CONDITIONAL STATEMENTS

Attempt : 1
Total Mark : 100
Marks Obtained : 100

Section 1 : CODING

1. "DIWALI DAMAKKA" is the most successful event dedicated to children and families. The Event has more than 20 rides for children and adults and the organizers always ensure not to compromise on the safety of the visitors.

To ensure the safety of the rides, the organizers have graded the rides in the fair according to the following conditions:

Hurl Factor must be greater than 50.Spin Factor must be greater than 60.Speed factor must be greater than 100.

The grades are as follows:

Grade is 10 if all three conditions are met.Grade is 9 if conditions (i) and (ii) are met.Grade is 8 if conditions (ii) and (iii) are met.Grade is 7 if conditions (i) and (iii) are met.Garde is 6 if only one condition is met.Grade is 5 if none of three conditions are met.

Write a program to display the grade of the rides, given the values of hurl factor, spin factor and speed factor of the ride under consideration.

Answer

```c
#include <stdio.h>
int main(){
    int hurl,spin,speed;
    scanf("%d %d %d",&hurl,&spin,&speed);
    bool hurlpass=hurl>50,
        spinpass=spin>60,
        speedpass=speed>100;
    int grade;
    if(hurlpass && spinpass && speedpass)   grade=10;
    else if(hurlpass && spinpass)        grade=9;
    else if(spinpass && speedpass)        grade=8;
    else if(hurlpass && speedpass)        grade=7;
    else if(hurlpass || spinpass || speedpass)  grade=6;
    else                        grade=5;
    switch(grade){
    }
    printf("%d",grade);
}
```

Status : Correct   *Marks : 10/10*

2. Sandy wants to design a body fat percentage calculation is as follows.

BF% = 64 – (20 * (height/waist))

The list below comes from the American Council and shows the average percentages in specified groups.

Essential fat: 2–5%Athletes: 6–13%Fitness: 14-17%Average: 18–24%Obese: 25%+

Answer

```c
#include<stdio.h>
int main(){
    float height, waist;
    scanf("%f%f",&height,&waist);
    float bf=64-(20*(height/waist));

    printf("%.2f : ",bf);
    if(bf<=5.5)      printf("Essential fat");
    else if(bf<=13.5)  printf("Athletes");
```

```
    else if(bf<=17.5)   printf("Fitness");
    else if(bf<=24.5)   printf("Average");
    else            printf("Obese");
}
```

Status : Correct   *Marks : 10/10*

3.   During the opening ceremony of "Kalyani Jewellers", the management has announced discounts for the customers on the first day. Each customer gets a card with a character(alphabet/digit/special character) printed on it. Based on a character each customer gets a discount.

Vikas, the manager of the Jewelry wants to write a program to get a character from the customer and check whether the given character is the alphabet, digit or special character to process the discount. Write a suitable code to complete this task.

Answer

```
#include<stdio.h>
int main(){
    char ch;
    scanf("%c",&ch);
    printf("'%c' is ",ch);
    if(ch>=48&&ch<=57)  printf("digit");
    else if(ch>=65&&ch<=90 || ch>=97&&ch<=122)  printf("alphabet");
    else            printf("special character");
}
```

Status : Correct   *Marks : 10/10*

4.   Muzammil is working in a water testing lab. He needs to classify the water into five categories based on its pH value. To simply his work he writes a program to display the category based on the pH value given in below flow chart. Help Muzammil to write a program.

Answer

```c
#include<stdio.h>
int main(){
    float ph;
    scanf("%f", &ph);

    if(ph<=2)     printf("Very acidic");
    else if(ph<7)   printf("Acidic");
    else if(ph==7)  printf("Neutral");
    else if(ph<12)  printf("Alkaline");
    else          printf("Very alkaline");
}
```

Status : Correct   *Marks : 10/10*

5. Seetha, a Maths teacher taught her students about leap year. She said students who told maximum correct answers give them a chocolate. Help the students to get a chocolate.

Answer

```c
#include<stdio.h>
int main(){
    int year;
    scanf("%d",&year);
    printf("%d: ",year);
    if(year%400==0)      printf("YES");
    else if(year%100==0)   printf("NO");
    else if(year%4==0)     printf("YES");
    else             printf("NO");
}
```

Status : Correct   *Marks : 10/10*

6. Total Expenses

The much awaited event at the entertainment industry every year is the "Screen Awards". This year the event is going to be organized on December

25 to honour the Artists for their professional excellence in Cinema. The Organizers has this time decided to launch an online portal to facilitate easy booking of the Award show's tickets.

They specifically wanted to provide an option for bulk booking in the portal, wherein there are many discounts announced. Write a program to help the Organizers to create the portal as per the requirement given below.

Given the ticket cost as 'X'.

If the number of tickets purchased is less than 50, there is no discount.

If the number of tickets purchased is between 50 and 100 (both inclusive), then 10% discount is offered.

If the number of tickets purchased is between 101 and 200(both inclusive), 20% discount is offered.

If the number of tickets purchased is between 201 and 400(both inclusive), 30% discount is offered.

If the number of tickets purchased is between 401 and 500(both inclusive), 40% discount is offered.

If the number of tickets purchased is greater than 500, then 50% discount is offered.

Answer

```
#include<stdio.h>
int main(){
    int cost, count;
    scanf("%d%d",&cost,&count);
    int discount=count<50?0:count<101?10:count<201?20:count<401?
30:count<501?40:50;
    double totalcost=cost*count*(1-discount/100.0);
    printf("%.2lf",totalcost);
    if(1);
    switch(discount){}

}
```

Status : Correct   *Marks : 10/10*

7. Ravi has different types of triangles in his hand. He wants to classify them as acute, obtuse, or right angled triangles. The sides of the triangle have to follow the Triangle Inequality theorem. Write a program to obtain three sides of the triangle with the third side being the greatest and classify them as acute, obtuse, and right angled.

Answer

```
#include<stdio.h>
int main(){
   float a,b,c;
   scanf("%f%f%f",&a,&b,&c);

   double diff = c*c-((a*a)+(b*b));
   if(c>=a+b){
     printf("Invalid sides");
   }
   else if(diff<0)    printf("Acute angled triangle");
   else if(diff>0)    printf("Obtuse angled triangle");
   else        printf("Right angled triangle");
}
```

Status : Correct   *Marks : 10/10*

8. Minimum and Maximum

The ExConFair is the region's largest trade fair on Construction Equipments & Technology. The Event organizers hired college students as volunteers to work at the fair as the event is targeted to be attended by approx. 30 million visitors.

At the Office in the fair, there are two guards who count how many times a volunteer enters into the fair ground. Though the duty of a guard is 24 hour in a day, but sometimes they fall asleep during their duty and could not track the entry of volunteers in the fair ground. But one better thing is that they never fall asleep at the same time. At least one of them remains awake and counts who enters into the office. Now the Event Head wants to

calculate how many times a volunteer has entered into the fair ground. He asked to the guard and they give him two integers A and B, count of first guard and second guard respectively.

Help the Event Head to count the minimum and maximum number of times a volunteer could have entered into the fair ground.

Answer

```
#include<stdio.h>
int main(){
    int a,b;
    scanf("%d%d",&a,&b);
    int min=a>b?a:b;
    int max=a+b;
    printf("%d %d",min,max);
    if(1);
}
```

Status : Correct   *Marks : 10/10*

9. Ticket type

"FantasyKingdom" is a brand new Amusement park that is going to be inaugurated shortly in the City and is promoted as the place for breath-taking charm. The theme park has more than 30 exhilarating and craziest rides and as a special feature of the park, the park Authorities has placed many Ticketing Kiosks at the entrance which would facilitate the public to purchase their entrance tickets and ride tickets.

The Entrance Tickets are to be issued typically based on age, as there are different fare for different age groups. There are 2 types of tickets – Child ticket and Adult ticket. If the age given is less than 15, then Child ticket is issued whereas for age greater than equal to 15, Adult ticket is issued. Write a piece of code to program this requirement in the ticketing kiosks.

Answer

```
#include<stdio.h>
int main(){
```

```
        int age;
        scanf("%d",&age);
        if(age<15)  printf("Child Ticket");
        else        printf("Adult Ticket");
}
```

Status : Correct   *Marks : 10/10*

10.   In a famous jewelry, customers are grouped according to age and gender.

Group1 Males under 25 years old

Group 2 Females under 25 years old

Group 3 Males between 25 - 45 years old

Group 4 Females between 25 - 45 years old

Group 5 All people over 45 years old.

Babu wants to write a program to display the customer's group. Help Babu.

Note : Gender code for a male is 1 and for female is 2. Display Invalid if user enters other gender codes

Answer
```
#include<stdio.h>
int main(){
    int age,gender;
    scanf("%d%d",&age,&gender);
    if(gender!=1&&gender!=2){
        printf("Invalid");
        return 0;
    }
    printf("Group ");
    if(age<25){
        if(gender==1)  printf("1");
        else          printf("2");
    }
    else if(age<=45){
```

```c
        if(gender==1)  printf("3");
        else        printf("4");
    }
    else        printf("5");
}
```

Status : Correct   ***Marks : 10/10***