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| **Date: 13/05/2021** | **Week Number: 2** |

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| **1** | Write a program to calculate the grade of the student according to the specified marks. Grade A:Marks(>85 and <=100)  Grade B:Marks(>60 and <=85)  Grade C:Marks(>40 and <=60)  Grade D:Marks(>30 and <=40)  Fail: Marks(<30)  **Sample Input:**  Enter your marks:60  **Sample Output:**  You got grade C |
|  | **Program:**  **#include<stdio.h>**  **int main()**  **{**  **int n;**  **printf("Enter your marks: ");**  **scanf("%d",&n);**  **if(n>85 && n<=100)**  **printf("Grade A");**  **else if(n>60 && n<=85)**  **printf("Grade B");**  **else if (n>40 && n<=60)**  **printf("Grade C");**  **else if (n>30 && n<=40)**  **printf("Grade D");**  **else if (n<30 && n>=0)**  **printf("Fail");**  **else**  **printf("Invalid input");**  **return 0;**  **}** |
|  | **Output Screenshot:** |
| **2** | **Write a Program to convert all characters in a given line from lower case to upper case.**  **Sample Input:**  Enter characters to convert case  I am student of 2nd Semester!  **Sample Output**:  I AM STUDENT OF 2ND SEMESTER! |
|  | **Program:**  **#include<stdio.h>**  **#include<conio.h>**  **#include<string.h>**  **#include<stdlib.h>**  **int main()**  **{**  **char s[50]; int i;**  **printf("Enter a string of characters to be converted to upper case: ");**  **gets(s);**  **printf("%s\n",s);**  **for(i=0;i<strlen(s);i++)**  **if(s[i]!=' ')**  **s[i]=s[i]-32;**  **printf("%s",s);**  **return 0;**  **}** |
|  | **Output Screenshot:** |
| **3** | **Write a C program using bitwise operators for the following:**  i) check whether specified bit is set or not  ii) set the specified bit and print the result  iii) clear the specified bit and print the result  **Sample Input/Output:**  Enter the number which you want check  25  Input number is 25  Enter the bit position, starts from zero  2  bit is not set  Enter the bit position, which you want to set  4  set : 16  The number after set is 25  Enter the bit position, which bit you want to clear  3  set : 0  The number after clear is 17 |
|  | **Program:**  **#include<stdio.h>**  **#include<stdlib.h>**  **int main()**  **{**  **int n,pos,pset,n1,cbit,n2;**  **printf("Enter the number which you want to check ");**  **scanf("%d",&n);**  **n2 == n;**  **printf("Enter the bit position, to check whether bit position is set or not(starts from 0) ");**  **scanf("%d",&pos);**  **n1 = n>>(pos-1);**  **if(n1&1==1)**  **printf("Bit position is set\n");**  **else**  **printf("Bit position is not set\n");**  **printf("Enter the bit position, which you want to set ");**  **scanf("%d",&pset);**  **n = n|(1<<pset);**  **printf("The number after set is %d\n",n);**  **printf("Enter the bit position, which bit you want to clear ");**  **scanf("%d",&cbit);**  **n = n&~(1<<cbit);**  **printf("The number after clear is %d",n);**  **return 0;**  **}** |
|  | **Output Screenshot:** |
| **4** | **a)Write a program to generate a multiplication table using for loop**  **b)Write a program to print the following pattern**  \*  \* \*  \* \* \*  \* \* \* \*  \* \* \* \* \* |
|  | **Program:**  **#include<stdio.h>**  **int main()**  **{**  **int n,i,j,x;**  **printf("Program for Multiplication Table\n");**  **printf("Which number multiplication table you want to generate: \n");**  **scanf("%d",&n);**  **printf("How many number of multiples \n");**  **scanf("%d",&i);**  **for(j=1;j<=i;j++)**  **{**  **x = n\*j;**  **printf("%d\*%d= %d \n",n,j,x);**  **}**  **int k,lines,nstars;**  **printf("How many lines do you want the pattern to be printed? ");**  **scanf("%d",&lines);**  **for(k=1;k<=lines;k++)**  **{**  **for(nstars=1;nstars<=k;nstars++)**  **{**  **printf("\* ");**  **}**  **printf("\n");**  **}**  **return 0;**  **}** |
|  | **Output Screenshot:** |
| **5** | **Write a program to implement a Simple Calculator using switch Statement**  **Sample input:**  Enter an operator (+, -, \*,): +  Enter two operands: 3 4  **Sample Output:**  3.0 + 4.0 = 7.0  **Sample input:**  Enter an operator (+, -, \*,): -  Enter two operands: 7 6  **Sample Output:**  7.0 - 6.0 = 1.0 |
|  | **Program:**  **#include<stdio.h>**  **#include<conio.h>**  **int main()**  **{**  **float a,b,c;**  **char choice;**  **printf("Enter the operation you want to perform (+,-,\*,/) ");**  **scanf("%c",&choice);**  **printf("Enter the operands ");**  **scanf("%f%f",&a,&b);**  **switch(choice)**  **{**  **case '+': c = a + b;**  **printf("The sum of the two operands is = %f",c);**  **break;**  **case '-': c = a - b;**  **printf("The difference of the two operands is = %f",c);**  **break;**  **case '\*': c = a \* b;**  **printf("The product of the two operands is = %f",c);**  **break;**  **case '/': c = a / b;**  **printf("The quotient of the two operands is = %f",c);**  **break;**  **default: printf("Invalid choice");**  **}**  **}** |
|  | **Output Screenshot:** |
| **6** | **Write a program to validate a given date and find the next date**  **Sample input:**  Enter the date 12  Enter the month 12  Enter the year 2000  **Sample Output:**  Date is valid & next date is: 13/12/2000  **Sample input:**  Enter the date 1  Enter the month 13  Enter the year 2000  **Sample Output:**  Month is invalid |
|  | **Program:**  **#include<stdio.h>**  **#include<conio.h>**  **#include<stdlib.h>**  **int main()**  **{**  **int date,month,year,leap=0;**  **printf("Enter the date ");**  **scanf("%d",&date);**  **printf("Enter the month ");**  **scanf("%d",&month);**  **printf("Enter the year ");**  **scanf("%d",&year);**  **printf("The date is %d/%d/%d",date,month,year);**  **if(date>31 && date<1)**  **{**  **printf("Invalid date");**  **return 0;**  **}**  **if(month>12 || month <1)**  **{**  **printf("Invalid month");**  **return 0;**  **}**  **if(year%4==0 && year%100!=0 || year%400==0)**  **leap=1;**  **if(leap && month == 2 && date == 28)**  **date = 29;**  **else**  **{**  **if(date==31 && (month==1 || month==3 || month==5 || month==7 || month==10))**  **{**  **month = month+1;**  **date=1;**  **}**  **else if(date==31 && month==12)**  **{**  **month = 1;**  **date = 1 ;**  **year++;**  **}**  **else if(date==30 && (month==4 || month==6 || month==8 || month==9 || month==11))**  **{**  **month++;**  **date=1;**  **}**  **else if(date==28 && month==2)**  **{**  **date=1;**  **month++;**  **}**  **else**  **{**  **date++;**  **}**  **}**  **printf("\nThe next date is %d/%d/%d",date,month,year);**    **return 0;**  **}** |
|  | **Output Screenshot:** |
| **1** | **Practice Programs**  **Write a program to find the roots of a quadratic equation.**  **Sample Input:**  Enter coefficients a, b and c: 1 2 1  **Sample Output:**  root1 = root2 = -1.00;  **Sample Input:**  Enter coefficients a, b and c: 1 3 1  **Sample Output:**  root1 = -0.38 and root2 = -2.62  **Sample Input:**  Enter coefficients a, b and c: 2 2 1  **Sample Output:**  root1 = -0.50+0.50i and root2 = -0.50-0.50i |
|  | **Program:**  **#include<stdio.h>**  **#include<conio.h>**  **#include<math.h>**  **int main()**  **{**  **float a,b,c,discriminant,root1,root2,img;**  **printf("Enter the coefficients a,b and c: ");**  **scanf("%f%f%f",&a,&b,&c);**  **discriminant = (b\*b)-(4\*a\*c);**  **if(discriminant>0)**  **{**  **root1=(-b+sqrt(discriminant))/(2\*a);**  **root2=(-b-sqrt(discriminant))/(2\*a);**  **printf("The roots are real and distinct, %f and %f",root1,root2);**  **}**  **else if(discriminant==0)**  **{**  **root1=root2=(-b)/(2\*a);**  **printf("The roots are real and equal, %f and %f",root1,root2);**  **}**  **else**  **{**  **img = sqrt(-discriminant)/(2\*a);**  **root1 = root2 = (-b)/(2\*a);**  **printf("The root1 is %.2f+%f.2i",root1,img);**  **printf("The root2 is %.2f-%.2fi",root2,img);**  **}**  **return 0;**  **}** |
|  | **Output Screenshot:** |
| 2 | **Write a program to squeeze repeated characters by inputting the characters in the given order.**  **Sample Input:**  aaaaabbbbbccccddddeeee  **Sample Output:**  abcde  **Sample Input:**  aaa1111gggg3333  **Sample Output:**  a1g3 |
|  | **Program:**  **#include<stdio.h>**  **#include<string.h>**  **int main()**  **{**  **char a,str1[50],str2[50];**  **int j=0,i=0;**  **printf("Enter repeated characters ");**  **gets(str1);**  **str2[j]=str1[i];**  **j = 1;**  **a = str1[i];**  **for(i=1;i<strlen(str1);i++)**  **{**  **if(a!=str1[i])**  **{**  **str2[j]=str1[i];**  **j++;**  **a=str1[i];**  **}**  **}**  **str2[j]='\0';**  **printf("%s",str2);**  **return 0;**  **}** |
|  | **Output Screenshot:** |