**Grand Assignment**

**Programming Part**

#include<iostream>

#include<math.h>

#include<iomanip>

using namespace std;

ArraymaxNo(){

int n, largest; //n is the number of elements in the array

int num[10];

cout<<"Question 15:\n Program Find maximum element in Array ";

cout<<"\nEnter number of elements you want to enter: ";

cin>>n;

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

cout<<"Enter Element "<<(i+1)<< ": ";

cin>>num[i];

}

largest = num[0];

for(int i = 1;i < n; i++) {

if(largest < num[i])

largest = num[i];

}

cout<<"Largest element in array is: "<<largest;

}

ArrayMinNo(){

int n, smallest; //n is the number of elements in the array

int num[10];

cout<<"Question 16:\n Program Find Smallest element in Array\n ";

cout<<"Enter number of elements you want to enter: ";

cin>>n;

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

cout<<"Enter Element "<<(i+1)<< ": ";

cin>>num[i];

} smallest = num[0];

for(int i = 1;i < n; i++) {

if(smallest > num[i])

smallest = num[i];

}

cout<<"Smallest element in array is: "<<smallest; }

printname(){

string name; //Q17

cout<<"Question 17:\n Print name 50 spaces right\nEnter your name\n";

cin>>name;

cout<<setw(50)<<name;

}

decision(){

cout<<"Question 18: the alternate 0f if else with switch\n By if else statements\n "; int age;

cout<<"Enter Your Age \t\t\t\t"; cin>>age;

if(age==18)

cout<<"You are eligible for ISSB\n";

else

cout<<"Your are not eligible for ISSB";

}

conditional(){

cout<<"Challange 18: By Conditional operator \t\t\t\n"; int age;

cout<<"Enter your age \t\t\t\t"; cin>>age;

cout<<(age==18? "You are eligible for ISSB": "You are eligible for ISSB");

}

floatseparatingtask(){

cout<<"Question 19\n";

cout<<"Separating parts of float datatype "<<endl;

float dec, j;

cout<<"Enter any float number"<<endl;

cin>>dec;

int integer =dec;

j = dec-integer; //3.4-3=0.4

cout<<"The number is "<<dec<<endl;

cout<<"The integer part is "<<integer<<endl<<"The decimal part is "<<j;

}

circle(){

cout<<"Question 20\n\t This is a function that calculate area , perimeter of circle\n";

cout<<"Enter radius \n\t"; int r ,PI=3.14;

cin>>r; int area=PI\*r\*r; cout<<"Area of circle is \t"<<area;

int perimeter=2\*PI\*r;

cout<<"\nPerimeter of Circle is \t"<<perimeter;

cout<<"\n Enter base and prependicular of area of triangle";

int base,pre; cin>>base; cin>>pre;

int trianglearea= (base\*pre)/2;

cout<<"The area of triangle is "<<trianglearea;

}

absolute(){

cout<<"Question 21\n\t\t\t\t This is absolute function that gives us absolute value \n";

int num ,abs;

cout<<"Enter a number \n"; cin>>num;

if(num<0) //num less than 0

cout<<(abs=-num); // print minus num

else cout<<(abs=num);

}

even(){ //even odd checking function

int i ; cout<<"Question 22: \n\tThis is Even Function \n";

for(i=1; i<=20; i++){

if(i%2==0) cout<<i<<" is even number \n";

else cout<<i<<" is Odd number \n"; }

}

agecalculator(){

int age\_year ,month;

int birth\_year ,birth\_month;

int current\_year,current\_month;

cout<<"This is age calculator: \n Enter your birth year and month \n";

cout<<"Year: "; cin>>birth\_year;

cout<<"Month: "; cin>>birth\_month;

cout<<"\n \n \n Enter a current year and month \n";

cout<<"Year: "; cin>>current\_year;

cout<<"Month: "; cin>>current\_month;

cout<<"\n\t\t\t\t Your age is calculating..... \n\n";

age\_year=(current\_year-birth\_year);

month=(12-birth\_month)+current\_month;

cout<<"You are "<<age\_year<<" Years and "<<month<<" month old";

if(age\_year<10&& age\_year>0)

cout<<"You are child \n";

else if(age\_year<20&&age\_year>10)

cout<<"You are adult\n";

else if(age\_year<50&&age\_year>20)

cout<<"You are Young\n";

else if(age\_year<100&&age\_year>50)

cout<<"You are too old\n";

}

starname(){

cout<<"This program print your name in stars.......\n\n\n";

cout<<"\*\*\*\*\*\*\*"<<setw(4)<<"\*"<<setw(6)<<"\*"<<setw(6)<<"\*"<<setw(8)<<"\*\*\*"<<setw(6)<<"\*"<<setw(8)<<"\*\n";

cout<<" \*"<<setw(7)<<"\*"<<setw(8)<<"\*\*\*\*\*"<<setw(4)<<"\*"<<setw(4)<<"\*"<<setw(6)<<"\*"<<setw(4)<<"\*"<<setw(3)<<"\*"<<setw(5)<<"\*\n";

cout<<" \*"<<setw(7)<<"\*"<<setw(12)<<"\*"<<setw(4)<<"\*"<<setw(3)<<"\*\*\*\*\*\*"<<setw(4)<<"\*"<<setw(4)<<"\*"<<setw(4)<<"\*\n" ;

cout<<" \*"<<setw(7)<<"\*"<<setw(12)<<"\*"<<setw(4)<<"\*"<<setw(6)<<"\*"<<setw(4)<<"\*"<<setw(4)<<"\*"<<setw(4)<<"\*\n" ;

cout<<" \*"<<setw(7)<<"\*"<<setw(12)<<"\*"<<setw(4)<<"\*"<<setw(6)<<"\*"<<setw(4)<<"\*"<<setw(5)<<"\*"<<setw(3)<<"\*\n" ;

cout<<"\*\*\*\*\*\*\*"<<setw(4)<<"\*"<<setw(12)<<"\*"<<setw(4)<<"\*"<<setw(6)<<"\*"<<setw(4)<<"\*"<<setw(8)<<"\*\*\n";

}

leapYear(){

cout<<"Question 25:\n Calculate that year is leap or not \n";

int year;

cout << "Enter a year: "; cin >> year;

if (year % 4 == 0) { //if year is divisable by 4

if (year % 100 == 0) {

if (year % 400 == 0)

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

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

} else cout << year << " is a leap year.";

} else cout << year << " is not a leap year."; }

Matrix() {

int i, j,arr[3][3], row,col; cout<<"Enter no of rows\t"; cin>>row;

cout<<"Enter no of Column\t"; cin>>col;

cout<<"The Two-dimensional Array is:\n";

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

{ for(j=0; j<col; j++){

cin>>arr[i][j]; //Storing array elements

} }

//Displaying array matrix

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

{

for(j=0; j<col; j++){

cout<<setw(10)<<arr[i][j];

}

cout<<"\t\n\t";

}}

currencyconverter(){ //Question 27

int dollars; float P;

cout<<"Enter currency in American Dollars"<<endl;

cin>>dollars;

P=dollars\*102.243;

cout<<dollars<<" American dollars are equal to "<<P<<" Pakistani rupees"<<endl;

}

average(){ //28

int a,b,c,d;

cout<<"Challange 28\n\tThis is average function \n";

cout<<"Enter a five integers to find it average ";

cin>>a>>b>>c>>d;

cout<<"The average of the numbers are "<<(a+b+c+d/5)<<endl;

}

int power(int base, int power){

int result=1;

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

result = result\*base;

}

return result;

}

SquareChecking(){

int n; cout<<"Enter any integer \t"; cin>>n;

if (ceil((double)sqrt(n)) == floor((double)sqrt(n)))

cout << n<<" perfect square";

else

cout <<n<< " not a perfect square";

}

SequentialSearch(){ //Q31

float Arr[10], num,count; int i;

cout<<"Question 31: Its about sequential search\n Enter an Array elements in float\n ";

for(i=1;i<=10;i++)

cin>>Arr[i];

cout<<"Enter an element you want to find location\n";

cin>>num;

for(i=0;i<10;i++){

if(Arr[i]==num)

cout<<num<<" found on location"<<i;

} if(i==count)

cout<<num<<" is not found on location";

}

ArrangeinAscending(){ //Q32

int arr[100];

int i, j, ascending;

cout<<"Question 33:\tThe program arrange 10 values in ascending order\nEnter elements in array: ";

for(i=0; i<10; i++)

cin>>arr[i];

for(i=0; i<10; i++) //Sorting an array in ascending order

{ for(j=i+1; j<10; j++)

{ //If there is a smaller element found on right of the array then swap it.

if(arr[j] < arr[i]) {

ascending = arr[i];

arr[i] = arr[j];

arr[j] = ascending; }}}

cout<<"Elements of array in sorted ascending order:"<<endl;

for(i=0; i<10; i++)

cout<<arr[i]<<endl;

}

ArrangeinDescending(){ //Q33

int num[10],i, j, desc;

cout<<"\n Enter 10 Numbers : \n";

cout<<" ";

for (i = 0; i < 10; ++i)

cin>>num[i];

for (i = 0; i < 10; ++i) // 'for' loop is used for sorting the numbers in descending order

{ for (j = i + 1; j < 10; ++j){

if (num[i] < num[j]) {

desc = num[i];

num[i] = num[j];

num[j] = desc; }}}

cout<<"\n Numbers in Descending Order : \n";

for (i = 0; i < 10; ++i)

cout<<num[i]<<endl;

}

evenOdd(){

int arr[10] ,i;

cout<<"This program finds even and odd from 1 to 10\n";

for(i=1;i<=10;i++){

if(i%2==0) cout<<i<<" is an even number\n";

else cout<<i<<" is an odd number\n"; }}

factOfArray(){ //Q36

int arr[10], i,fact=1;

cout<<"Enter 10 values & the program finds each number factorial\n";

for(i=1; i<=10;i++)

cin>>arr[i];

for(i=1; i<=10;i++){

for(int j=1; j<=arr[i]; j++)

fact =fact\*j ;

cout<<"The factorial of "<<arr[i]<<" is "<<fact<<endl;

fact=1;

}}

switchpractice(){

int n;

cout<<"Question 37\tThis program will change the number into text \nEnter a number from 0 to 9\n";

cin>>n;

switch(n){

case 0: (n==0); cout<<"Zero"; break;

case 1: (n==1); cout<<"One"; break;

case 2: (n==2); cout<<"TWO"; break;

case 3: (n==3); cout<<"Three"; break;

case 4: (n==4); cout<<"Four"; break;

case 5: (n==5); cout<<"Five"; break;

case 6: (n==6); cout<<"Six"; break;

case 7: (n==7); cout<<"Seven"; break;

case 8: (n==8); cout<<"Eight"; break;

case 9: (n==9); cout<<"Nine"; break;

}}

IntegerChecking()

{ int Check[5],i,j;

cout<<"Question 38: Determine positive , negitive or zero number\n Enter five numbers\n";

for(i=0;i<5;i++)

cin>>Check[i];

for(i=0;i<5;i++){

if(Check[i]<0)

cout<<i<<" is negative numbers\n";

if(Check[i]>0)

cout<<i<<" is positive number\n";

else

cout<<i<<" is zero\n";

}}

void tables(){ //table function //Q40

int multiplier, table[8]={2,3,4,5,6,7,8,9};

cout<<"This is a table function \n";

for(int i=2; i<=9; i++){

cout<<"\n The Table of "<<i<<endl;

for(int j=1;j<=10;j++)

cout<<i<<" \* "<<j<<" = "<<i\*j<<endl;

}}

int main(){

int n; cout<<"Grand ASSIGNMENT\n\t PROGRAMMING PART\n";

while(1)

{

cout<<"\n\nPress 0 for Exit "<<endl;

cout<<"The Programming part have a questions from 15 to 40 \n";

cout<<"Type question number and program show the calculation of that question "<<endl;

cin>>n;

switch(n)

{

case 0:

exit(0);

break;

case 15:

ArraymaxNo();

break;

case 16:

ArrayMinNo();

break;

case 17:

printname(); //Q17

break;

case 18:

decision();

conditional(); //18

break;

case 19:

floatseparatingtask();

break;

case 20:

circle();

break;

case 21:

absolute(); //Q40

break;

case 22:

even();

break;

case 23:

agecalculator( );

break;

case 24:

starname( );

break;

case 25:

leapYear();

break;

case 26:

Matrix();

break;

case 27:

currencyconverter();

break;

case 28:

average();

break;

case 29:

cout<<power(3,2);

break;

case 30:

SquareChecking();

break;

case 31:

SequentialSearch();

break;

case 32:

//binarySearch

break;

case 33:

ArrangeinAscending();

break;

case 34:

ArrangeinDescending();

break;

case 35:

evenOdd();

break;

case 36:

factOfArray();

break;

case 37:

switchpractice();

break;

case 38:

IntegerChecking();

break;

case 39:

tables();

break;

default:

cout<<"invalid !! ";

break;

}

}

return 0;

}