Republic of the Philippines
POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

CMPE 30052

DATA STRUCTURES AND ALGORITHM

MIDTERMS
LINKED LIST

Submitted by: Signature

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Section:

BSCpE 2-2

Submitted to:

Engr. Julius Cansino

Date Submitted:

September 14, 2019

SOURCE CODE:

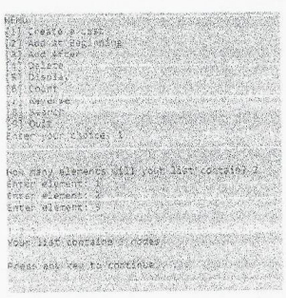
```
#include <iostream>
using namespace std;

struct node
{
	int data;
	node *next;
};

node *head, *newnode, *temp, *hh, *mm, *nodels;
void create(), display(), addbeginning(), addafter(), del(), count(), reverse(),
search();
int data;

void create()
{
	int howmany;
	cout<<"\n\nHow many elements will your list contain? ";
	cin>>howmany;
	while (howmany != 0)
	{
		cout << "ENTER ELEMENT : ";
		cin >> data;
		newnode = new node;
		newnode->data=data;
		newnode->next=NULL;

		if (head == NULL)
		{
			head = temp = newnode;
		}
		else
		{
			temp -> next = newnode;
			temp = newnode;
		}
		howmany--;
	}
	cout<<endl;
	display();
}

void display()
{
	int count;
	temp = head;

	while(temp != NULL)
	{
		cout<< temp -> data <<" ";
		temp = temp -> next;
		count ++;
	}
	cout<<"\nYour list contains "<<count<<" nodes\n\n";
}

void count()
{
	int count;
	temp = head;
	cout<<endl<<endl;
	while(temp != NULL)
	{
		temp = temp -> next;
		count ++;
	}
	cout<<"\nYour list contains "<<count<<" nodes\n";
}

void addbeginning()
{
cout<<"\n\nEnter element to be added ";
cin>>data;
newnode = new node;
```

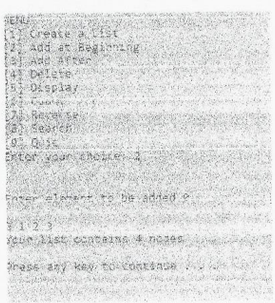
```
newnode -> data = data;
newnode -> next = head;
head = newnode;
cout<<endl;
display();
}

void addafter()
{
	int position; int i=1; int count;
	cout<<"\n\nEnter after position: ";
	cin>>position;

	temp = head;
	while(temp != NULL)
	{
		temp = temp -> next;
		count ++;
	}

if(position>count)
{
	cout<<"Invalid position";
}
else
{
	temp = head;
	while(i<position)
	{
		temp = temp->next;
		i++;
	}
	newnode = new node;
}

cout<<"Enter element to be added: ";
cin>>data;
newnode -> data = data;
newnode -> next = temp -> next;
temp -> next = newnode;
cout<<endl;
display();
}

void del()
{
	int delposition = 0;
	bool checker = false;

	if (head == 0)
	{
		cout<<"SORRY, YOU CAN NOT DELETE FROM AN EMPTY LIST.";
	}
		cout<<"\n\nWhat is the element you want to remove from the list? ";
		cin>>data;
		nodels = head;

		while (nodels != 0)
		{
			delposition++;
			if (nodels->data == data)
			{
				checker = true; break;
			}
			nodels = nodels -> next;
		}

		if(!checker)
		{
		cout<<"Sorry, your input is not in the list."<<endl;
		}
	node *hh = new node;
	node *mm = new node;
	hh = head;
```

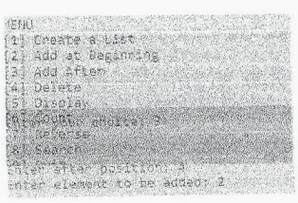
```
	for(int i=1;i!=delposition; i++)
	{
		mm=hh;
		hh=hh->next;
	}
	mm->next=hh->next;
	cout<<endl;
	display();
}

void reverse()
{
	hh = head;
	mm = NULL;
	newnode = NULL;
	while(hh!=NULL)
	{
		newnode = hh->next;
		hh->next=mm;
		mm = hh;
		hh = newnode;
	}
	head=mm;
	cout<<endl;
	display();
}

void search()
{
	//Node *temp;
	int searchposition=0;
	bool checker=false;
	if(checker!=0)
	{
		cout<<"Sorry, the list contains no elements."<<endl;
	}
	cout<<"\n\nWhat element do you want to find in the list? ";
	cin>>data;
	nodels=head;
	while(nodels!=0)
	{
		searchposition++;
		if(nodels->data==data)
		{
			checker=true;
			cout<<"Element "<<data<<" is found at position
"<<searchposition<<endl;
		}
		nodels=nodels->next;
	}
	if(!checker)
	{
		cout<<"Element "<<data<<" is not in the list."<<endl;
	}
}

void Menu()
{
	cout<<"MENU"<<endl;
	cout<<"[1] Create a List"<<endl;
	cout<<"[2] Add at Beginning"<<endl;
	cout<<"[3] Add After"<<endl;
	cout<<"[4] Delete"<<endl;
	cout<<"[5] Display"<<endl;
	cout<<"[6] Count"<<endl;
	cout<<"[7] Reverse"<<endl;
	cout<<"[8] Search"<<endl;
	cout<<"[9] Quit"<<endl;
}

int main()
{
	int choice = 0;
	do
	{
```

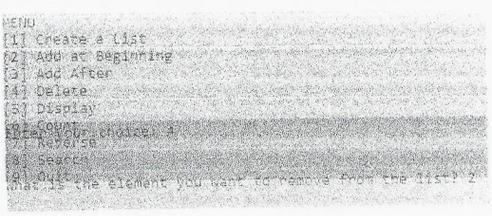
```
                system("cls");
                Menu();
                cout<<"Enter your choice: ";
                cin>>choice;

                switch (choice)
                {
                      case 1:
                            create(); system("pause"); break;
                      case 2:
                            addbeginning(); system("pause"); break;
                      case 3:
                            addafter(); system("pause"); break;
                      case 4:
                            del(); system("pause"); break;
                      case 5:
                            display(); system("pause"); break;
                      case 6:
                            count(); system("pause"); break;
                      case 7:
                            reverse(); system("pause"); break;
                      case 8:
                            search(); system("pause"); break;
                      case 9:
                            cout<<"\n\nSystem will now be closed. Thank you!!!!!
"<<endl<<endl; system("pause"); break;
                      default:
                            cout<<"Invalid choice"<<endl;
                }
        } while (choice != 9);
        return 0;
}
```

SAMPLE OUTPUT:









SOURCE CODE:

```
#include<iostream>
#include <stdlib.h>
#include <cstdlib>
using namespace std;

struct Node
{
   int number;
   Node *next;
};
Node *HEAD = NULL;
void display(Node* head);
void insertatfirst();
void insertatnthnode(int loc, int value);
void search(Node *head);
Node* createLinkedList(int n);
void delet(int n);
void menu();
void displaynumofelements(Node* Head);
void reverselist (Node* Head);
int main (){

        menu();
}
void menu(){
        cout << "1. Create" << "\n"
                <<      "2. Add at Beginning"
<< "\n"
                << "3. Add after" << "\n"
                << "4. Delete" << "\n"
                << "5. Display" << "\n"
                << "6. Display" << "\n"
                << "7. Reverse" << "\n"
                << "8. Search" << "\n"
                << "9. Quit" << "\n";
        int choice, nodenum, nvaluedelete,
nvalueinsert, ninsertloc,valtosearch;
        cout << "Enter your choice: ";
        cin >> choice;
        switch (choice){
                case 1:
                {
                        cout << "How many
nodes?: " << endl;
                        cin >> nodenum;
                        HEAD =
createLinkedList(nodenum);
                        display(HEAD);
                        cout << endl;
                        break;
                }
                case 2:
                {
                        insertatfirst();
                        break;
                }
                case 3:{
                        cout << "Enter value to
insert: ";
                        cin >> nvalueinsert;
                        cout << "Enter the
location of where you want to insert the value
after: ";
                        cin >> ninsertloc;

        insertatnthnode(ninsertloc,
nvalueinsert);
                        break;
                }
                case 4:{
                        cout << "Enter what
value to delete: ";
                        cin >> nvaluedelete;
                        delet(nvaluedelete);
                        display(HEAD);
                        break;
                }
                case 5:{
                        display(HEAD);
                        break;
                }
                case 6:{

        displaynumofelements(HEAD);
                        break;
                }
                case 7:{
                        reverselist(HEAD);
                        break;
                }
                case 8:{
                        search(HEAD);
                        break;
```

```
                }
                case 9:{
                        exit(0);
                }}
        menu();
}
Node* createLinkedList(int n){

        Node *Head = new Node;
        Head = NULL;
        Node *temp;
        temp = NULL;
        temp = new Node;
        Node *it = new Node;
        it = NULL;
        for(int i=0;i < n;i++){
                temp =
(Node*)malloc(sizeof(Node));
                cout << "Enter the number for
node number " << i+1 << " " << ": ";
                cin >> temp->number;
                temp->next=NULL;
                if (Head == NULL){
                        Head = temp;
                }
                else{
                        it=Head;
                        while(it->next != NULL)
                        it = it->next;
                        it->next = temp;
                }
        }
        return Head;
        menu();

}
void display(Node* head){
        Node*it = head;
        while(it != NULL){
                cout << it->number << "-> ";
                it = it->next;
        }
                cout << "NULL" << endl;
}
void insertatfirst(){
        Node* ins = new Node;
        if(HEAD == NULL){
                        int nodenum;
                        cout << "List is empty,
please create a node first." << endl;
                        Node*HEAD = NULL;
                        cout << "How many
nodes?: " << endl;
                        cin >> nodenum;
                        HEAD =
createLinkedList(nodenum);
                        display(HEAD);
                        cout << endl;
                        }
        else{
                int insertData;
                cout << "Enter the integer
value: ";
                cin >> insertData;
                Node *p = new Node;
                p->number = insertData;
                p->next = HEAD;
                HEAD = p;
        }
        display(HEAD);
}
void delet(int n){
        if(HEAD->number == n){
                Node *current = new Node;
                current = HEAD;
                HEAD = HEAD->next;
                delete current;
        }
        else{
                                Node *current
= new Node;
                                Node *prev =
/*this->*/HEAD;
                current = HEAD->next;
                while(current != NULL) {
        if(current->number == n)
                                {
                break;
        }
        else
                                {
                prev = current;
                current = current->next;
        }
        }
        if(current == NULL)
```

```
                        {
        cout << "The element is not found!\n";
        }
                        else
                        {
        prev->next = current->next;
        delete current;
        }}
}

void insertatnthnode(int loc, int value){
                Node *p1 = new Node;
                Node *p3 = new Node;
                Node *p = new Node;
                p3 = HEAD;
                for(int i = 1; i < loc + 1; i++)
                {
                        p1 = p3;
                        p3 = p3->next;
                }
                p->number = value;
                p1->next = p;
                p->next = p3;
                display(HEAD);
}
void displaynumofelements(Node* Head){
        Node*it = Head;
        int i = 0;
        while(it != NULL){
                it = it->next;
                i += 1;
        }
        cout << i << endl;
                current = HEAD->next;
                while(current != NULL) {
        if(current->number == n)
                                {
                                        cout <<
"The number is in the list\n";
                break;
        }
        else
                                {
                prev = current;
                current = current->next;
        }}
        if(current == NULL)
                                {
        cout << "The element is not found!\n";
        } }
}
void reverselist(Node *Head){
        Node *ptr1 =new Node;
        Node *ptr2 = new Node;
        Node *ptr3 = new Node;
  if (Head == NULL)
  {
    cout<<"List is empty"<<endl;
    return;
  }
  if (Head->next == NULL)
  {
    return;
  }
  ptr1 = Head;
  ptr2 = ptr1->next;
```

Polytechnic University of the Philippines
College of Engineering
Computer Engineering Department

CMPE 30052

Data Structures and Algorithms

Midterm Project

Linked-list

BSCPE 2-2

Submitted by:

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Engr. JULIUS CANSINO

September 14, 2019

SOURCE CODE:

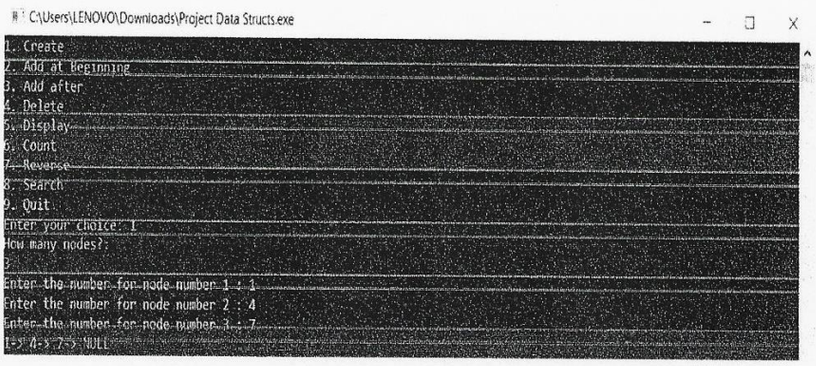
```
#include<iostream>
#include <stdlib.h>
#include <cstdlib>
using namespace std;

struct Node
{
   int number;
   Node *next;
};
Node *HEAD = NULL;
void display(Node* head);
void insertatfirst();
void insertatnthnode(int loc, int value);
void search(Node *head);
Node* createLinkedList(int n);
void delet(int n);
void menu();
void displaynumofelements(Node* Head);
void reverselist (Node* Head);
int main (){

        menu();
}
void menu(){
        cout << "1. Create" << "\n"
                <<      "2. Add at Beginning"
<< "\n"
                << "3. Add after" << "\n"
                << "4. Delete" << "\n"
                << "5. Display" << "\n"
                << "6. Display" << "\n"
                << "7. Reverse" << "\n"
                << "8. Search" << "\n"
                << "9. Quit" << "\n";
        int choice, nodenum, nvaluedelete,
nvalueinsert, ninsertloc,valtosearch;
        cout << "Enter your choice: ";
        cin >> choice;
        switch (choice){
                case 1:
                {
                        cout << "How many
nodes?: " << endl;
                        cin >> nodenum;
                        HEAD =
createLinkedList(nodenum);
                        display(HEAD);
                        cout << endl;
                        break;
                }
                case 2:
                {
                        insertatfirst();
                        break;
                }
                case 3:{
                        cout << "Enter value to
insert: ";
                        cin >> nvalueinsert;
                        cout << "Enter the
location of where you want to insert the value
after: ";
                        cin >> ninsertloc;

                insertatnthnode(ninsertloc,
nvalueinsert);
                        break;
                }
                case 4:{
                        cout << "Enter what
value to delete: ";
                        cin >> nvaluedelete;
                        delet(nvaluedelete);
                        display(HEAD);
                        break;
                }
                case 5:{
                        display(HEAD);
                        break;
                }
                case 6:{

                displaynumofelements(HEAD);
                        break;
                }
                case 7:{
                        reverselist(HEAD);
                        break;
                }
                case 8:{
                        search(HEAD);
                        break;
```

```
                }
                case 9:{
                        exit(0);
                }}
        menu();
}
Node* createLinkedList(int n){

        Node *Head = new Node;
        Head = NULL;
        Node *temp;
        temp = NULL;
        temp = new Node;
        Node *it = new Node;
        it = NULL;
        for(int i=0;i < n;i++){
                temp =
(Node*)malloc(sizeof(Node));
                cout << "Enter the number for
node number " << i+1 << " " << ": ";
                cin >> temp->number;
                temp->next=NULL;
                if (Head == NULL){
                        Head = temp;
                }
                else{
                        it=Head;
                        while(it->next != NULL)
                        it = it->next;
                        it->next = temp;
                }
        }
        return Head;
        menu();

}
void display(Node* head){
        Node*it = head;
        while(it != NULL){
                cout << it->number << "-> ";
                it = it->next;
        }
                cout << "NULL" << endl;
}
void insertatfirst(){
        Node* ins = new Node;
        if(HEAD == NULL){
                        int nodenum;
                        cout << "List is empty,
please create a node first." << endl;
                        Node*HEAD = NULL;
                        cout << "How many
nodes?: " << endl;
                        cin >> nodenum;
                        HEAD =
createLinkedList(nodenum);
                        display(HEAD);
                        cout << endl;
                        }
        else{
                int insertData;
                cout << "Enter the integer
value: ";
                cin >> insertData;
                Node *p = new Node;
                p->number = insertData;
                p->next = HEAD;
                HEAD = p;
        }
        display(HEAD);
}
void delet(int n){
        if(HEAD->number == n){
                Node *current = new Node;
                current = HEAD;
                HEAD = HEAD->next;
                delete current;
        }
        else{
                                Node *current
= new Node;
                                Node *prev =
/*this->*/HEAD;
                current = HEAD->next;
                while(current != NULL) {
         if(current->number == n)
                                {
                break;
        }
        else
                                {
                prev = current;
                current = current->next;
        }
        }
        if(current == NULL)
```

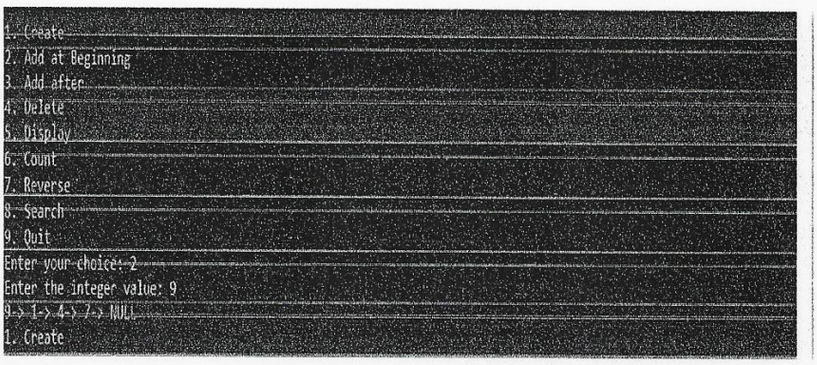
```
                        {
        cout << "The element is not found!\n";
        }
                        else
                        {
        prev->next = current->next;
        delete current;
        }}
}

void insertatnthnode(int loc, int value){
                Node *p1 = new Node;
                Node *p3 = new Node;
                Node *p = new Node;
                p3 = HEAD;
                for(int i = 1; i < loc + 1; i++)
                {
                        p1 = p3;
                        p3 = p3->next;
                }
                p->number = value;
                p1->next = p;
                p->next = p3;
                display(HEAD);
}
void displaynumofelements(Node* Head){
        Node*it = Head;
        int i = 0;
        while(it != NULL){
                it = it->next;
                i += 1;
        }
        cout << i << endl;
}
void search(Node *head){

        int n;
        cout << "Enter value to search: " <<
endl;
        cin >> n;
if(HEAD->number == n){
        cout << "The number is in the list";
        }
        else{
                                Node *current
= new Node;
                                Node *prev =
/*this->*/HEAD;
                current = HEAD->next;
                while(current != NULL) {
        if(current->number == n)
                                {
                                        cout <<
"The number is in the list\n";
                break;
        }
        else
                                {
                prev = current;
                current = current->next;
        }}
        if(current == NULL)
                                {
        cout << "The element is not found!\n";
        } }
}
void reverselist(Node *Head){
        Node *ptr1 =new Node;
        Node *ptr2 = new Node;
        Node *ptr3 = new Node;
  if (Head == NULL)
  {
    cout<<"List is empty"<<endl;
    return;
  }
  if (Head->next == NULL)
  {
    return;
  }
  ptr1 = Head;
  ptr2 = ptr1->next;
  ptr3 = ptr2->next;
  ptr1->next = NULL;
  ptr2->next = ptr1;
  while (ptr3 != NULL)
  {
    ptr1 = ptr2;
    ptr2 = ptr3;
    ptr3 = ptr3->next;
    ptr2->next = ptr1;
  }
  HEAD = ptr2;
  display(HEAD);
}
```

OUTPUT:

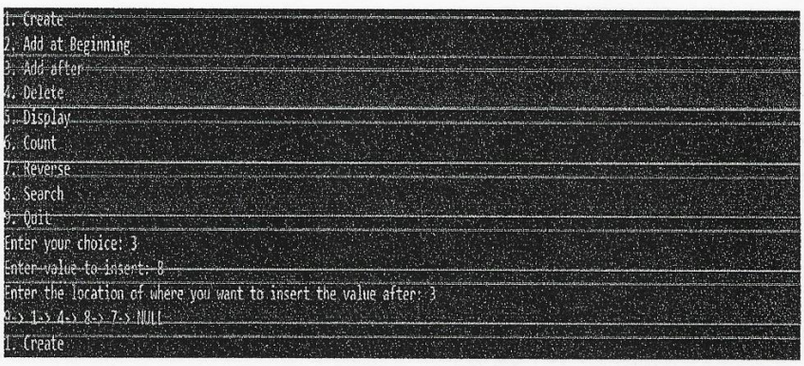
CREATE:



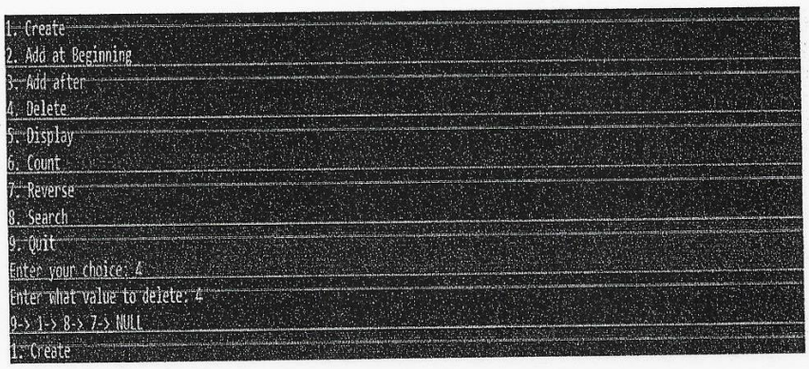
ADD AT BEGINNING:



ADD AFTER:

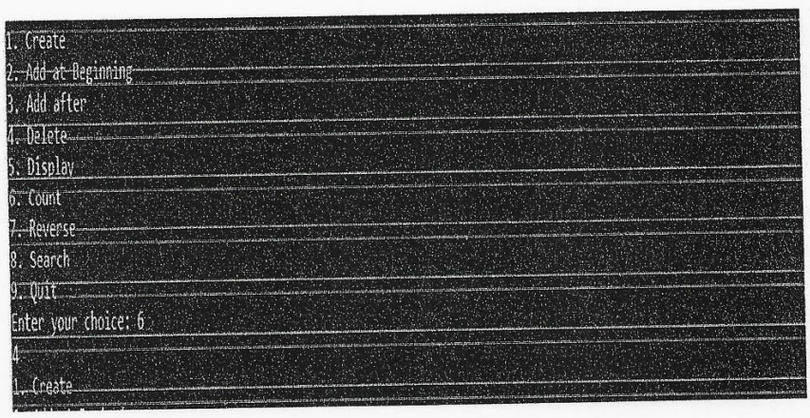


DELETE:



DISPLAY:

COUNT:



REVERSE:

```
1. Create
2. Add at Beginning
3. Add after
4. Delete
5. Display
6. Count
7. Reverse
8. Search
9. Quit
Enter your choice: 7
7-> 8-> 1-> 9-> NULL
1. Create
```

SEARCH:

```
Enter your choice: 8
Enter value to search:
9
The number is in the list
1. Create
2. Add at Beginning
3. Add after
4. Delete
5. Display
6. Count
7. Reverse
8. Search
9. Quit
Enter your choice: 8
Enter value to search:
2
The element is not found!
1. Create
```

POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

Computer ENGINEERING TECHNOLOGY 1 PROJECT

Engineer Orland Tubola

Submitted by:

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Almonte, Hillary
Andrada, Ali
Cuevas, Janella
Del Rosario, Maubrey
Galarosa, Angelu
Ladion, Vince
Mangabay, Kyle
Nombrado, Paul Joseph
Ricafort, Noel
Sison, Jaeson
Velarde, Prince Charles
Alejo, Alvin Dale
Anciado, Jericho
Bocanog, Verlanne
Decano, Rainier
Gajelan, Mafe
Janeo, Janelle
Magadia, Sammael
Matibag, Kyla Mae
Puno, Erika
Rivera, Stephanie Eurice
Teoxon, Emmanuel
Villas, Bruce Jared

TRUTH TABLE

A	B	C	D	E	F	a	b	c	d	e	f	g
0	0	0	0	0	0	1	0	1	1	0	1	1
0	0	0	0	0	1	0	1	1	1	1	1	0
0	0	0	0	1	0	1	1	0	0	1	1	1
0	0	0	0	1	1	1	0	0	1	1	1	1
0	0	0	1	0	0	0	0	0	0	1	0	1
0	0	0	1	0	1	1	0	0	1	1	1	0
0	0	0	1	1	0	1	1	1	0	1	1	1
0	0	0	1	1	1	0	0	0	1	1	1	0
0	0	1	0	0	0	0	0	0	0	1	1	0
0	0	1	0	0	1	1	0	0	0	1	1	1
0	0	1	0	1	0	0	0	0	0	1	0	1
0	0	1	0	1	1	1	1	1	0	1	1	1
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1	0	0	0	0	0	0	1	1	1	1	1	0
1	0	0	0	0	1	1	0	1	1	0	1	1

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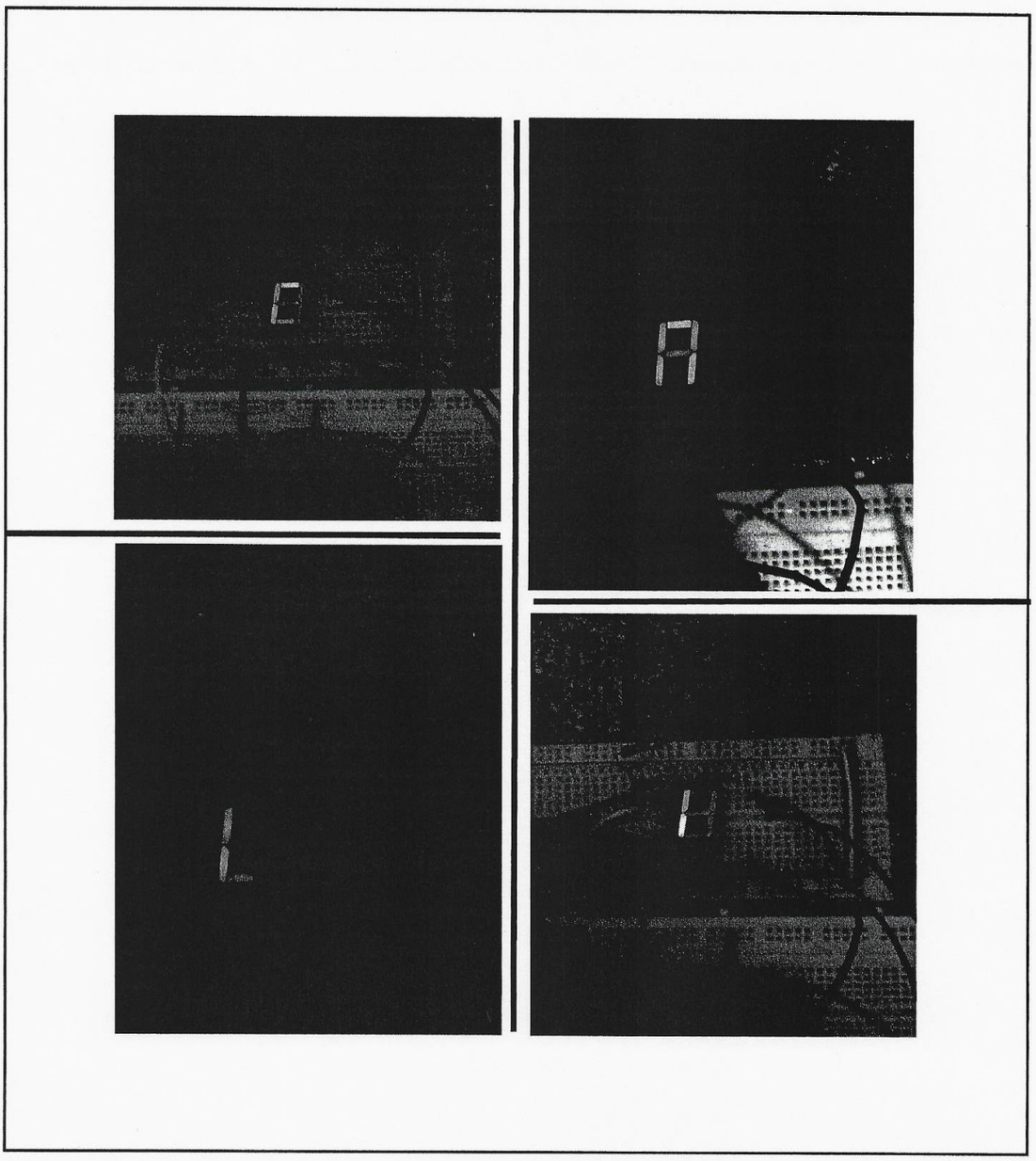
ANONAS COR. PUREZA STREETS, STA. MESA, MANILA

ACTUAL PICTURE



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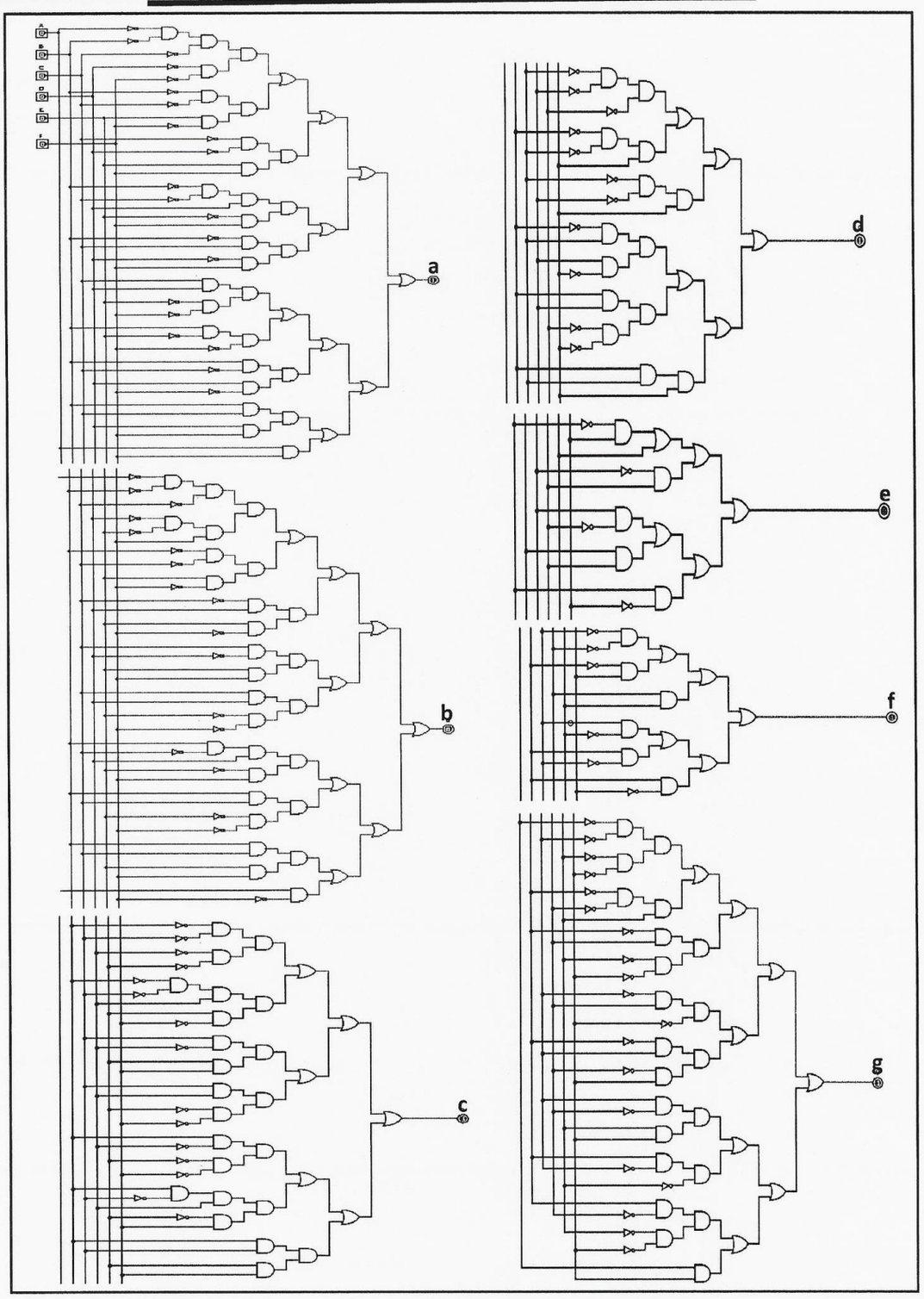
SCHEMATIC DIAGRAM



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A student doing an electrical circuit

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A group of students defensing their thesis In front of the panels

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ACCESS SUMMER WORKSHOP

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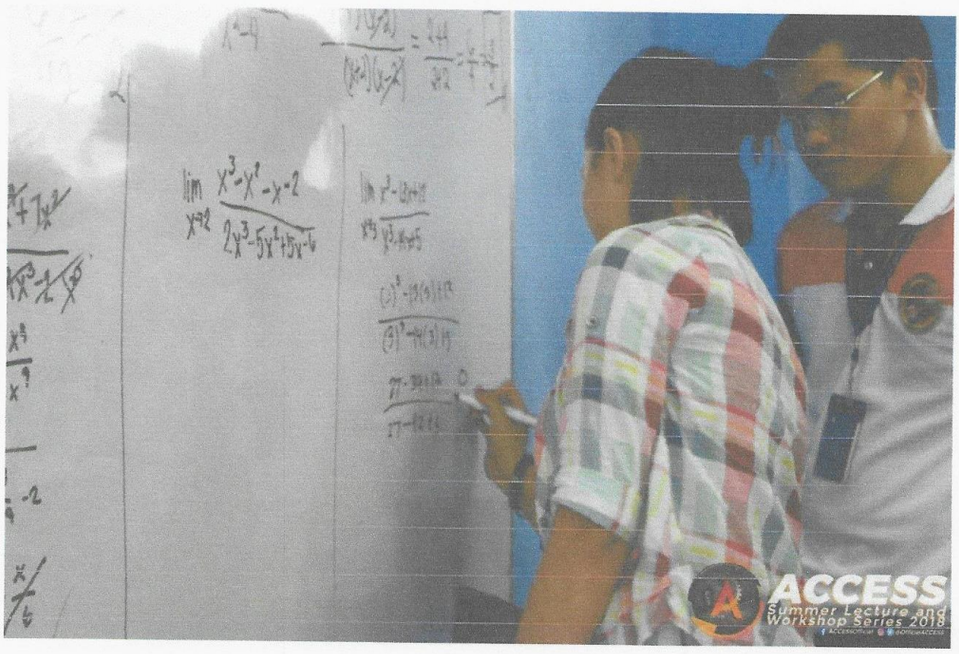

Interactive learning in a workshop

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A student doing an electrical circuit/mobug

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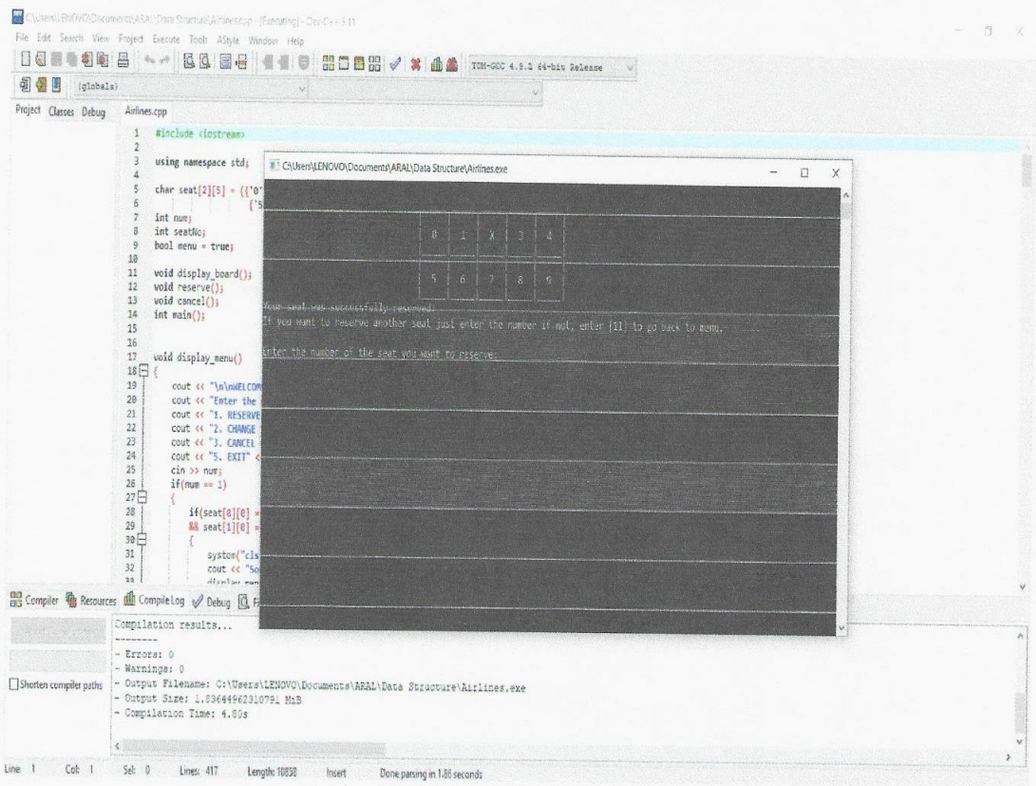
ANONAS COR. PUREZA STREETS, STA. MESA, MANILA



A working program made by the students

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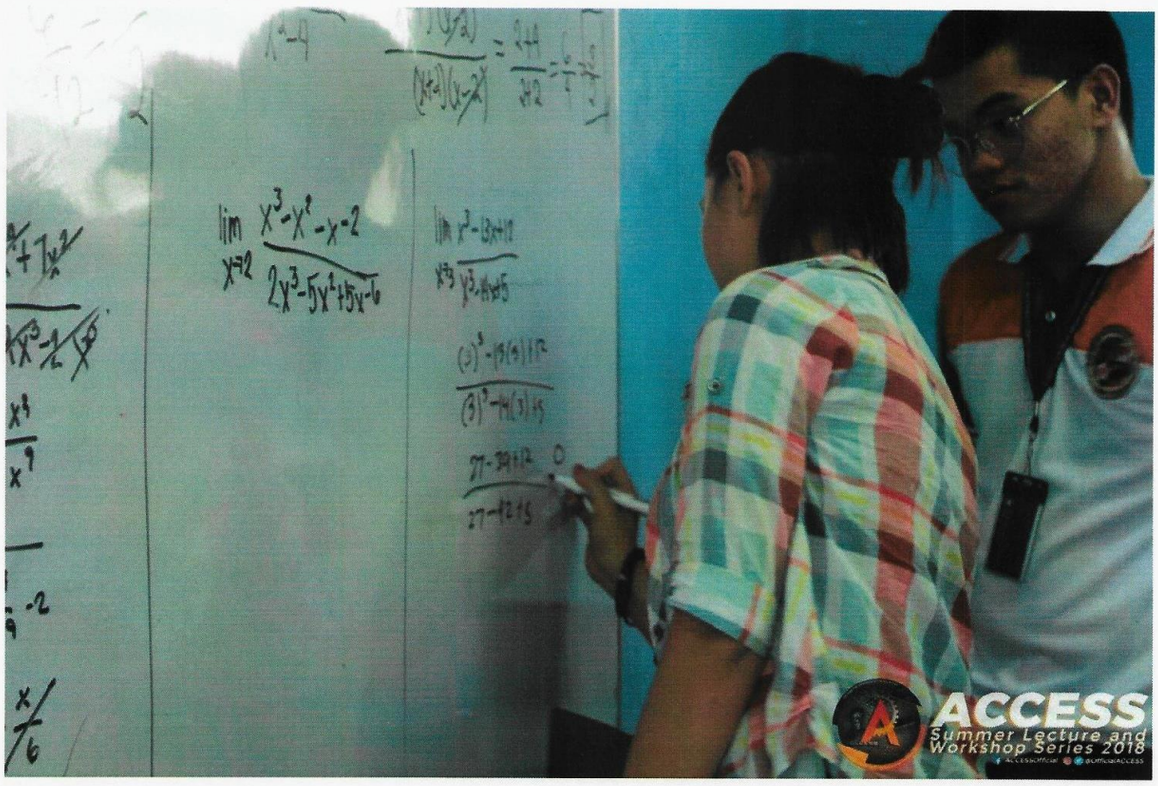

Interactive learning in a workshop

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A group of students performing their activity in computer programming subject

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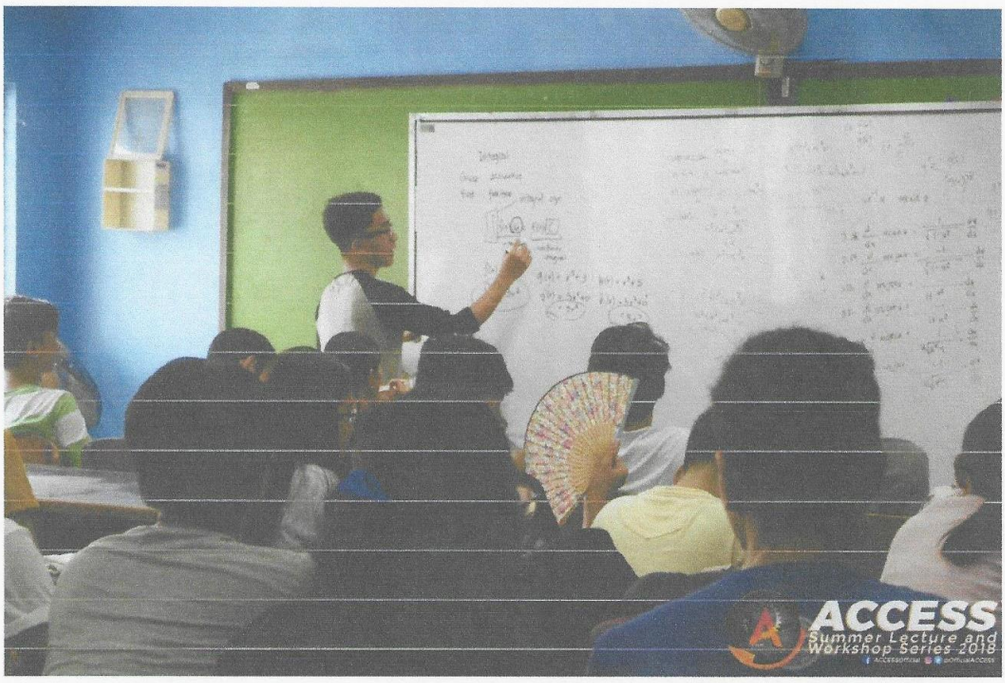

ACCESS SUMMER WORKSHOP

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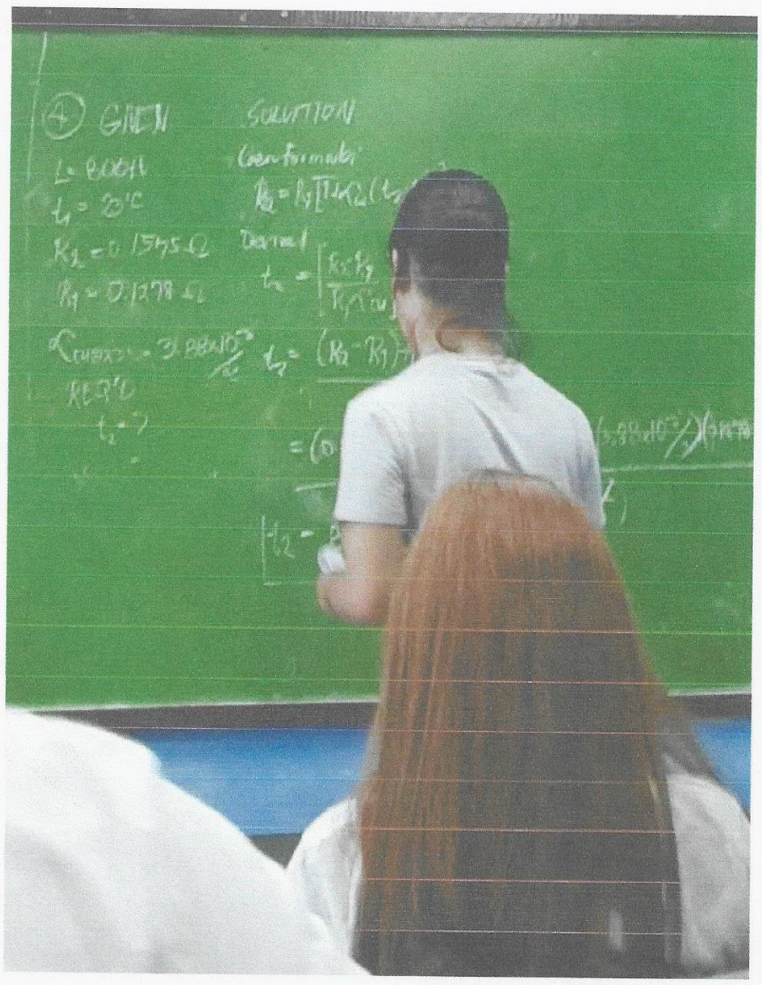
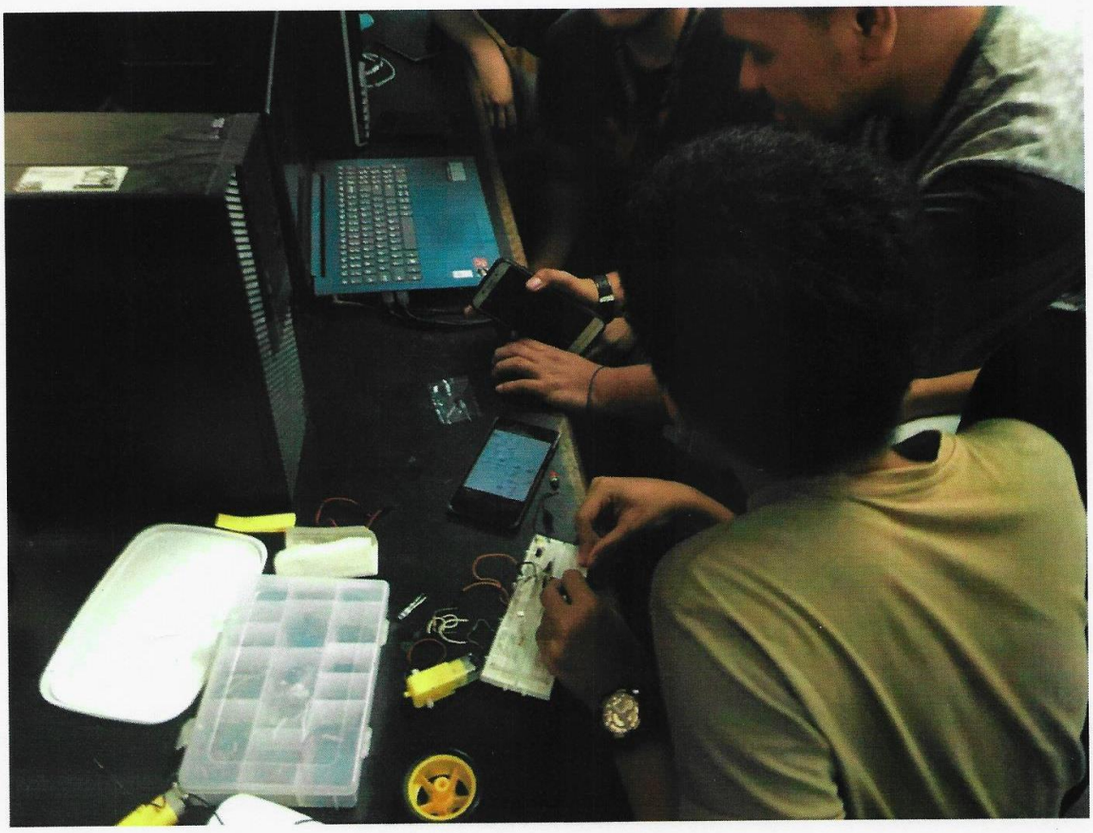


A student solving and explaining a circuit problem



A student doing an electrical circuit

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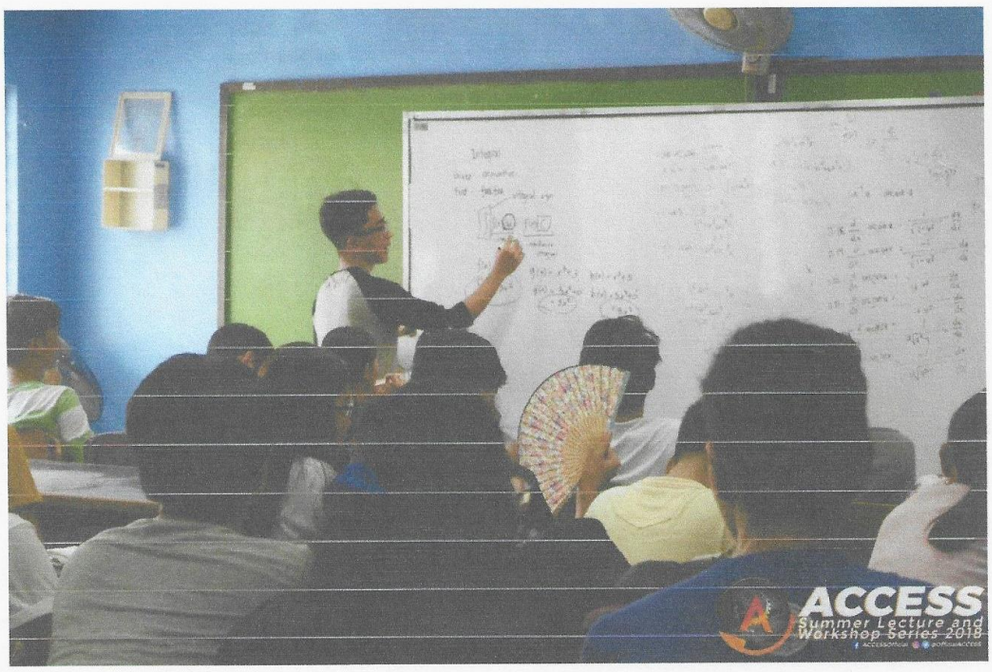

ACCESS SUMMER WORKSHOP

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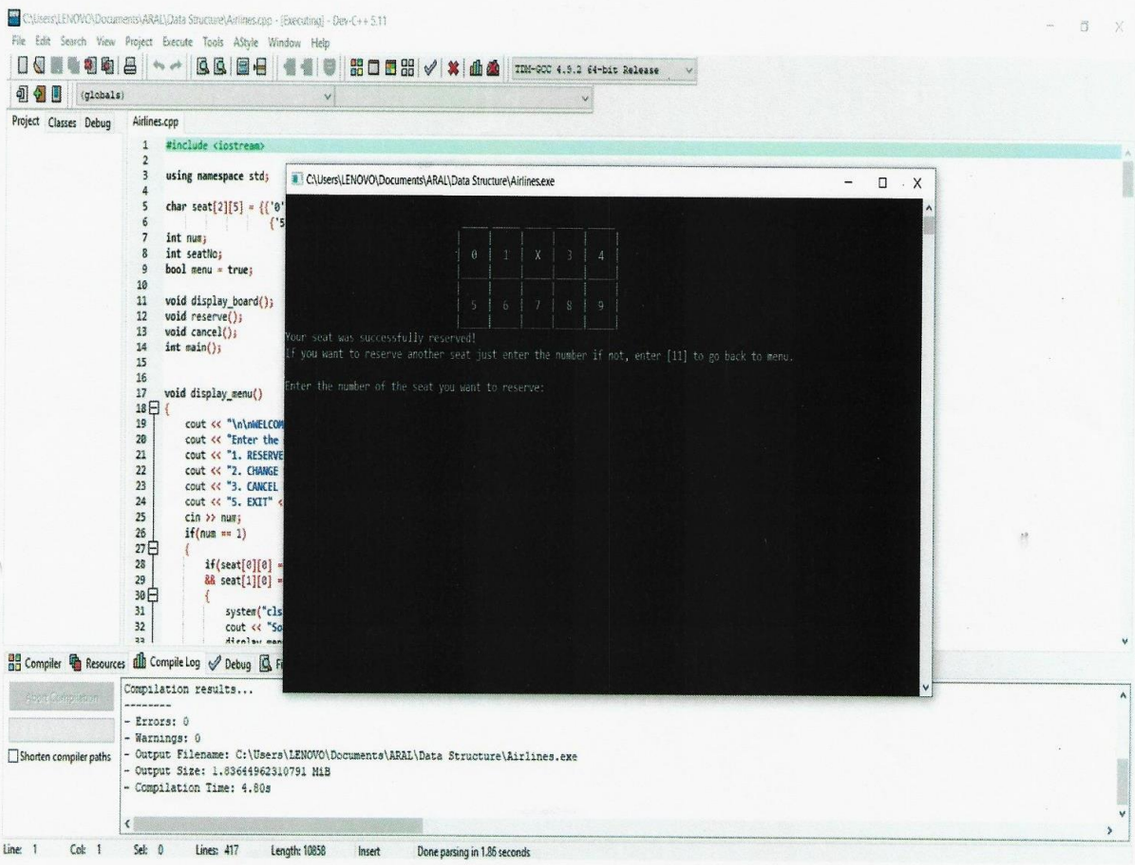
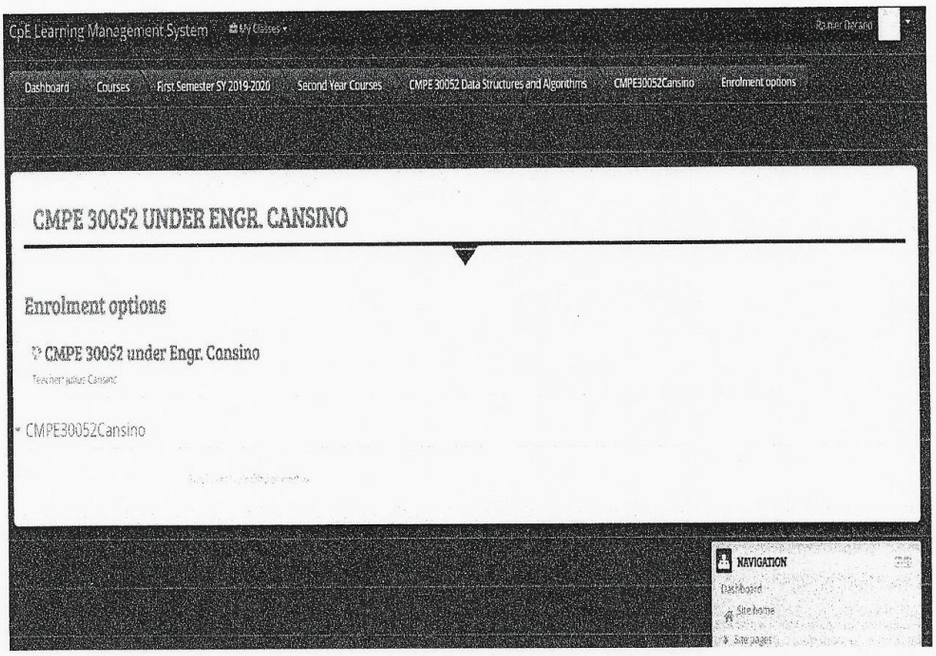


A working program made by the students



Example of student's COELMS

POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COMPUTER ENGINEERING DEPARTMENT
CMPE 30022 INDIVIDUAL REPORT
EXPERIMENT NO 1.
TITLE: Laboratory 1

Format & Presentation: 5%	
Timeliness: 10%	
Correctness: 15%	
Analysis & Conclusion: 20%	
FINAL SCORE:	8

NAME: BABILONIA, ALEJANDRO B. SECTION: BS COE 1-6
DATE PERFORMED: 7/25/19 DATE SUBMITTED: 8/5/19
PROFESSOR: ENGR. ROLITO L. MAHAGUAY, MSE-CPE

ANALYSIS:

Laboratory Exercises number 1

Since this is our first time using flowgorithm or visual logic we are not that proficient on using them. Based from the laboratory exercises number 1.1 to 1.3, if using flowgorithm, we have to declare every variable so that there will be no error when running the program. For example, in the assignment we enter "number" as a variable, we have to declare "number" as Integer, Real, String, or Boolean type, if not, then, pressing run, the program would state that "the variable 'number' was not declared." If using visual logic, we do not need to declare every variable the program will read it whether it is an Integer, Real, String, or Boolean type.

CONCLUSION:

Laboratory Exercise number 1

The Output of the laboratory exercises from 1.1 to 1.3 whether using flowgorithm or visual logic is the same. The output when using the quotation mark ("") it will print the same word inside, then when using ampersand (&) and the variable name it will print the variable. For example, laboratory exercise number 1, let 'number1' be the variable and then let us say that 'number1 is equal to '15' after that "The number is: " be the String (String represent text). The when using the output, it goes like this: "The number is:" & number1, then it will print: The number is 15.

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POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COMPUTER ENGINEERING DEPARTMENT
CMPE 30022 INDIVIDUAL REPORT
EXPERIMENT NO 6.
TITLE: laboratory 6

NAME: Alejandro B. Babilonia SECTION: BS COE 1-6
DATE PERFORMED: 8-15-19 DATE SUBMITTED: 8-20-19
PROFESSOR: ENGR. ROLITO L. MAHAGUAY, MSE-CPE

Format & Presentation: 5%	
Timeliness: 10%	
Correctness: 15%	
Analysis & Conclusion: 20%	
FINAL SCORE:	50

ANALYSIS:

Laboratory Exercises number 6

In lab 6.1 we used a for loop, in lab 6.2 we used while loop and in lab 6.3 we also used while loop. Inside of lab 6.1 loop is the input and the assignment, inside of lab 6.2 loop is the input and the if statement, inside the if statement is the assignment, and lastly inside of 6.3 loop is the input and assignment. Outside of each loop is the output.

CONCLUSION:

Laboratory Exercises number 6

In lab 6.1, we entered a three (3) test score and have an output of the following: the sum, the number of tests and the average. In lab 6.2, we entered the sales amount and if we entered a negative number it will stop then compute for the average. In lab 6.3, the program would display the square of number one (1) to twenty (20).

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COMPUTER ENGINEERING DEPARTMENT

EXPERIMENT

6

CMPE30022

PROGRAMMING LOGIC AND DESIGN

LAB06

Grade: 90

Group No. 1

Block No. 1-6

GROUP MEMBERS

	Name	Signature
1.	ADOBAS, JOHN LOYD	
2.	ALOC, JHON ROBERT	
3.	ANTOLIN, JOHN LORENZ	
4.	ARENDAIN, CHRISTINE MAE	
5.	BABILONIA, ALEJANDRO	

8/4/19

ROLITO L. MAHAGUAY, MSE-CPE
Professor, CMPE30022

POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COMPUTER ENGINEERING DEPARTMENT
CMPE 30022 INDIVIDUAL REPORT
EXPERIMENT NO 5.
TITLE: laboratory 5

Format & Presentation:	5%
Timeliness:	10%
Correctness:	15%
Analysis & Conclusion:	20%
FINAL SCORE:	50

NAME: Alejandro B. Babilonia SECTION: BS COE 1-6
DATE PERFORMED: 8-15-19 DATE SUBMITTED: 8-29-19
PROFESSOR: ENGR. ROLITO L. MAHAGUAY, MSE-CPE

ANALYSIS:

Laboratory Exercises number 5

In lab 5.1, we used the while loop, in the true block is the input and assignment, the false block contains the output. In lab 5.2, we used while statement, in the true block is the input and the if statement, inside the if statement is the assignment, in the false block of the while loop, it contains the output. In lab 5.3, we used the while loop, in the true block it has the input and the assignment, in the false block it contains the output of the program.

CONCLUSION:

Laboratory Exercises number 5

In lab 5.1, we entered the sales and it will compute for the commission but if we entered a negative number it will end the program. In lab 5.2, we need to enter three (3) sales, it will compute for the commission, but after entering three (3) sales, it will automatically end the program. In lab 5.3, the program would display the number one (1) to ten (10) in descending order.

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COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

EXPERIMENT

5

CMPE30022

PROGRAMMING LOGIC AND DESIGN

LAB05

Grade: 100

Group No. 1

Block No. 1-6

GROUP MEMBERS

	Name	Signature
1.	ADOBAS, JOHN LOYD	
2.	ALOC, JHON ROBERT	
3.	ANTOLIN, JOHN LORENZ	
4.	ARENDAIN, CHRISTINE MAE	
5.	BABILONIA, ALEJANDRO	

ROLITO L. MAHAGUAY, MSE-CPE
Professor, CMPE30022

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COMPUTER ENGINEERING DEPARTMENT
CMPE 30022 INDIVIDUAL REPORT
EXPERIMENT NO 4.
TITLE: laboratory 4

Format & Presentation: 5%	
Timeliness: 10%	
Correctness: 15%	
Analysis & Conclusion: 20%	
FINAL SCORE:	10

NAME: Alejandro B. Babilonia SECTION: BSCoE 1-6
DATE PERFORMED: 8-1-19 DATE SUBMITTED: 8-8-19
PROFESSOR: ENGR. ROLITO L. MAHAGUAY, MSE-CPE

ANALYSIS:

Laboratory exercise number 4

By using flowgorithm, the laboratory exercise number 4 contains nested if-else statement. Because inside the if-else statement is another if-else statement. For example, laboratory exercise number 4.3, the conditions are inside of another condition, repeating until the condition is satisfied.

CONCLUSION:

Laboratory exercise number 4

The output contains the value of the number or letters entered. For example, laboratory 4.3, if the user input other state code other than the code given the program would state "Invalid State Code" and if the state code is entered correctly then the program would state the charge fee and the total price. Let us say that TX is the given code and the charge fee is 40, then the price is 100. If the program is correct then the output would be "The shipping charge is: $40" and "The total price is: $140."

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COMPUTER ENGINEERING DEPARTMENT

EXPERIMENT

4

CMPE30022

PROGRAMMING LOGIC AND DESIGN

LAB04

Grade:

Group No. 1

Block No. 1-6

GROUP MEMBERS

	Name	Signature
1.	ADOBAR, John Loyd	
2.	ALOC, Jhon Robert	
3.	ANTOLIN, John Lorenz	
4.	ARENDAIN, Christine Mae	
5.	BABILONIA, Alejandro	

ROLITO L. MAHAGUAY, MSE-CPE
Professor, CMPE30022

POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COMPUTER ENGINEERING DEPARTMENT
CMPE 30022 INDIVIDUAL REPORT
EXPERIMENT NO 3.
TITLE: laboratory 3

Format & Presentation: 5%	
Timeliness: 10%	
Correctness: 15%	
Analysis & Conclusion: 20%	
FINAL SCORE:	

NAME: Alejandro B. Babilonia SECTION: BS COE 1-6
DATE PERFORMED: 8-01-19 DATE SUBMITTED: 8-08-19
PROFESSOR: ENGR. ROLITO L. MAHAGUAY, MSE-CPE

ANALYSIS:

Laboratory Exercise number 3

By using the flowgorithm, the laboratory exercise number 3 uses If statement, the if-else statement contains a condition wherein it must not be an Integer and String, Integer and Boolean, String and Boolean, if the condition is stated as follows, the program would state that "The following were specified as: Integer and String" or "The following were specified as: String and Boolean."

ONCLUSION:

Laboratory Exercise number 3

If the condition is satisfied the program would print your output in the true section, and if the condition is not satisfied, the output would be false section. For example, in lab 3.1 if the answer is "Y" then it is true if the answer is "N" then it is false.

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COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

EXPERIMENT

3

CMPE30022

PROGRAMMING LOGIC AND DESIGN

LAB03

Grade: 10

Group No. 1

Block No. 1-6

GROUP MEMBERS

	Name	Signature
1.	ABOBAS, John Loyd	
2.	ALOC, Jhon Robert	
3.	ANTOLIN, John Lorenz	
4.	ARENDAIN, Christine Mae	
5.	BABILONIA, Alejandro	

ROLITO L. MAHAGUAY, MSE-CPE
Professor, CMPE30022

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COMPUTER ENGINEERING DEPARTMENT
CMPE 30022 INDIVIDUAL REPORT
EXPERIMENT NO 1.
TITLE: Laboratory 2

Format & Presentation: 5%	
Timeliness: 10%	
Correctness: 15%	
Analysis & Conclusion: 20%	
FINAL SCORE:	50

NAME: BABILONIA, ALEJANDRO B. SECTION: BS COE 1-4
DATE PERFORMED: 7/26/19 DATE SUBMITTED: 8/25/19
PROFESSOR: ENGR. ROLITO L. MAHAGUAY, MSE-CPE

ANALYSIS:

Laboratory Exercises number 2

Since we have experience creating laboratory exercise number 1, it went smoothly because it is almost the same, except for laboratory number 2.3. The input is not only limited to numbers, it can be in the form of letters or words. In the laboratory exercise 2.3 the input must be the gross amount which is "3575" and the name of the employee which must be "Bill Robinson." The input was assigned as variable 'employee' and declared as 'employee' with String type, so that when entering the input, the output would become the entered text.

CONCLUSION:

Laboratory Exercises number 2

The output is still the same as that of laboratory exercise number 1, with the words inside a quotation mark (") and an ampersand (&). The only difference is that the output of laboratory exercise number 2.3 has a String (String represent a text) which is "Bill Robinson" but the name could be change because the variable 'employee' is declared as a String type, that means that you could enter any text and numbers. Visual logic could print the same but when entering a text in the input the text must be inside the quotation mark to be read as a text or the error message would occur.

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COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

EXPERIMENT 1

CMPE30022

PROGRAMMING LOGIC AND DESIGN

LAB02

Grade: 40 late

Group No. 1

Block No. 1-6

GROUP MEMBERS

	Name	Signature
1	ADOBAS, John Loyd	
2	ALOC, Jhon Robert	
3	ANTOLIN, John Lorenz	
4	ARENDAIN, Christine Mae	
5	BABILONIA, Alejandro	

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Professor, CMPE30022

Republic of the Philippines
POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

COEN 3343
(DATA STRUCTURES and ALGORITHM)

EXERCISE
1

ARRAYS

Submitted by:

_____

Submitted to:

_____

Date Submitted

_____

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COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

EXPERIMENT

1

CMPE30022

PROGRAMMING LOGIC AND DESIGN

LAB01

Grade: 45 late

Group No. 1

Block No. 1-6

GROUP MEMBERS

	Name	Signature
1.	ADOBAS, John Loyd	
2.	ALOC, John Robert	
3.	ANTOLIN, John Lorenz	
4.	ARENDAIN, Christine Mae	
5.	BABILONIA, Alejandro	

7/25/19

ROLITO L. MAHAGUAY, MSE-CPE
Professor, CMPE30022

```
**********************
MENU
**********************
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
----------------------
Enter your choice: 5
Thank you!
Press any key to continue . . .
```

C. Call by Value and Call by Reference

PROBLEM #03

Create a program that will compute the factorial of a given number.

- Use function to pass the value of the number input and to pass the reference of the factorial value of the number.

EXAMPLE PROGRAM OUTPUT:

```
Enter a number: 5
The factorial of 5 is 120
```

```
Enter a number: 5
The factorial of 5 is 120
```

PROBLEM #4

Create a simple arithmetic calculator that will add, subtract, multiply and divide two integer numbers.

- Use function to accept inputs for the two operands.

EXAMPLE PROGRAM OUTPUT:

```
ARITHMETIC CALCULATOR
----------------------
[1] - Addition
[2] - Subtraction
[3] - Multiplication
[4] - Division
----------------------
Enter your choice: 2
Enter first number: 20
Enter second number: 10
The difference is: 10
```

```
ARITHMETIC CALCULATOR
----------------------
[1] - Addition
[2] - Subtraction
[3] - Multiplication
[4] - Division
----------------------
Enter your choice: 3
Enter first number: 10
Enter second number: 5
The product is: 50
```

LABORATORY EXERCISE 2 - 04

Arrays with Functions

4. In the main function
   a. Declare and initialize a two-D array of integers containing 10 rows and 10 columns. The diagonal cells that run from upper left to lower right contain the integer 1. The other cells contain 0.
   b. Prompt the user to enter a row number and a column number - these will be used below.
   c. Populate the array as described above using either a for loop or a while loop.

2. Call a function named printArray that will print the contents of the array, 10 numbers per line
3. Call a function named printCol that will print the contents of the col number referenced above, one item per line. Do this using a for or a while loop- and any other structures needed.
4. Call a function named printRow that will print the contents of the row number referenced above, all on one line with a space between each. Do this using a for or a while loop - and any other structures needed.

1. Create a program compute the area of the following polygons and circle.
   - Area of square given the side.
   - Area of rectangle given the length and width.
   - Area of triangle given the base and height.
   - Area of circle given the radius.

```
**********
MENU
**********
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
----------
Enter your choice: 1
----------
AREA OF SQUARE
----------
Enter the side of the square: 10

The area is 100 sq. units
```

```
**********
MENU
**********
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
----------
Enter your choice: 2
----------
AREA OF RECTANGLE
----------
Enter the length and width of the rectangle: 20 10

The area is 200 sq. units
```

```
**********
MENU
**********
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
----------
Enter your choice: 3
----------
AREA OF TRIANGLE
----------
Enter the base and width of the height: 8 4

The area is 16 sq. units
```

```
**********
MENU
**********
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
----------
Enter your choice: 4
----------
AREA OF CIRCLE
----------
Enter the radius: 20

The area is 125.6 sq. units
```

PROBLEM #5

Create a program that will overload a function named linechar that display a line of characters. Use the given main function below:

```
int main()
{
      linechar();
      linechar('@');
      linechar(10);
      linechar('#',15);
      system("pause>0");
      return 0;
}
```

EXAMPLE PROGRAM OUTPUT:

```
**********

@@@@@@@@@@@@@@@@@@@@

**********

###############
```

D. Pass by Array

PROBLEM #6

Create a program that will ask the user to enter ten numbers and get the sum of all odd numbers.

- The numbers will be stored in array
- The array value will be pass as argument to the function

EXAMPLE PROGRAM OUTPUT:

```
Enter 10 numbers: 1 2 3 4 5 6 7 8 9 10
The sum of all odd numbers is 25
```

```
Enter 10 numbers: 3 2 6 8 3 9 7 0 1 5
The sum of all odd numbers is 28
```

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POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

COEN 3343
(DATA STRUCTURES and ALGORITHM)

EXERCISE
2

FUNCTIONS

Submitted by:

_____

Submitted to:

_____

Date Submitted

_____

D. Function Overloading and Pass by Array

PROBLEM #7

Create a program that will add two numbers, three numbers and four numbers. Use function overloading named add.

- Use two arguments for adding two numbers
- Use three arguments for adding three numbers
- Use array with size 4 for adding four numbers
- The function add will return the value of the sum of the numbers

EXAMPLE PROGRAM OUTPUT:

```
Enter two numbers: 1 2
The sum is: 3
Enter three numbers: 1 2 3
The sum is: 6
Enter four numbers: 1 2 3 4
The sum is: 10
```

```
Enter two numbers: 6 3
The sum is: 9
Enter three numbers: 8 3 4
The sum is: 15
Enter four numbers: 9 1 2 3
The sum is: 15
```

PROBLEM 8

Create a program that will overload a function named substring. The function will ask the user to enter the index range of the substring inclusive. Using the function defined the program will display the whole string value, the substring given the start index, and the substring given the start and last index.

EXAMPLE PROGRAM OUTPUT:

```
Original string value:
the quick brown fox jumps over the dog...
String length: 41

Enter start index: 10
Enter end index: 24


function substring(str):
the quick brown fox jumps over the dog...

function substring(str, 10):
brown fox jumps over the dog...

function substring(str, 10, 24):
brown fox jumps
```

```
Original string value:
the quick brown fox jumps over the dog...
String length: 41

Enter start index: 26
Enter end index: 33


function substring(str):
the quick brown fox jumps over the dog...

function substring(str, 26):
over the dog...

function substring(str, 26, 33):
over the
```

LABORATORY EXERCISE 3

A. User Defined Function: Void Function

PROBLEM #01

Create a program that will add, subtract, multiply and divide two numbers.

- Use user defined function for each operator
- Any number divided by zero will result to undefined
- Use int data type only for all variables declared

EXAMPLE PROGRAM OUTPUT:

```
**********
MENU
**********
[A] - addition
[S] - subtraction
[M] - multiplication
[D] - division
[X] - exit
----------
Enter your choice: a

ADDITION
Enter first number: 10
Enter second number: 20
The sum is 30
```

```
**********
MENU
**********
[A] - addition
[S] - subtraction
[M] - multiplication
[D] - division
[X] - exit
----------
Enter your choice: s

SUBTRACTION
Enter first number: 101
Enter second number: 90
The difference is 11
```

```
**********
MENU
**********
[A] - addition
[S] - subtraction
[M] - multiplication
[D] - division
[X] - exit
----------
Enter your choice: m

MULTIPLICATION
Enter first number: 13
Enter second number: 3
The product is 39
```

```
**********
MENU
**********
[A] - addition
[S] - subtraction
[M] - multiplication
[D] - division
[X] - exit
----------
Enter your choice: d

DIVISION
Enter first number: 18
Enter second number: 3
The qoutient is 6
```

```
**********
MENU
**********
[A] - addition
[S] - subtraction
[M] - multiplication
[D] - division
[X] - exit
----------
Enter your choice: d

DIVISION
Enter first number: 10
Enter second number: 0
Undefined!
```

```
**********
MENU
**********
[A] - addition
[S] - subtraction
[M] - multiplication
[D] - division
[X] - exit
----------
Enter your choice: x
Thank you!
Press any key to continue . . .
```

```
********************
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
--------------------
Enter your choice: 5
Thank you!
Press any key to continue . . .
```

LABORATORY EXERCISE 2 - 02

Call by value reference

2. Create a program that will compute the factorial of a given number.
   - Use function to pass the value of the number input and to pass the reference of the factorial value of the number.

Possible Output of the program:

```
Enter a number: 5
The factorial of 5 is 120
```

```
Enter a number: 5
The factorial of 5 is 120
```

LABORATORY EXERCISE 2 - 03

Predefined Functions

3. Write a function max() which returns the greatest of two numbers. Test the function with a call from main() and complete with suitable printouts.

B. User Defined Function: Return Value

PROBLEM #02

Create a program compute the area of the following polygons and circle.

- Area of square given the side.
- *Area of rectangle given the length and width.*
- Area of triangle given the base and height.
- Area of circle given the radius.

EXAMPLE PROGRAM OUTPUT:

```
********************
MENU
********************
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
--------------------
Enter your choice: 1
--------------------
AREA OF SQUARE
--------------------
Enter the side of the square: 10

The area is 100 sq. units
```

```
********************
MENU
********************
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
--------------------
Enter your choice: 2
--------------------
AREA OF RECTANGLE
--------------------
Enter the length and width of the rectangle: 20 10

The area is 200 sq. units
```

```
********************
MENU
********************
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
--------------------
Enter your choice: 3
--------------------
AREA OF TRIANGLE
--------------------
Enter the base and width of the height: 8 4

The area is 16 sq. units
```

```
********************
MENU
********************
[1] - Area of square
[2] - Area of rectangle
[3] - Area of triangle
[4] - Area of circle
[5] - exit
--------------------
Enter your choice: 4
--------------------
AREA OF CIRCLE
--------------------
Enter the radius: 20

The area is 125.6 sq. units
```

Enter ten numbers: 10 10 10 10 10 20 20 20 20 20 first to the highest: 20 second to the highest: 10 first to the lowest: 10 second to the lowest: 20	Enter ten numbers: 1 1 1 1 1 1 1 1 1 1 first to the highest: 1 second to the highest: 1 first to the lowest: 1 second to the lowest: 1

B. One Dimensional Array: Array of Characters

PROBLEM #04

Create a program that will check if a given word is a palindrome or not a palindrome.

EXAMPLE PROGRAM OUTPUT:

Enter a word: racecar racecar is a palindrome	Enter a word: nasabayabasan nasabayabasan is a palindrome
Enter a word: apple fruit apple fruit is not a palindrome	Enter a word: eagle eagle is not a palindrome

LABORATORY EXERCISE 1

A. ONE DIMENSIONAL ARRAY – Number Array

PROBLEM #01

Create a program that will ask the user to enter 10 numbers and display it in ascending order.

EXAMPLE PROGRAM OUTPUT:

```
Enter 10 numbers:
10 9 8 7 6 5 4 3 2 1
Element value of array in ascending order
1 2 3 4 5 6 7 8 9 10
```

```
Enter 10 numbers:
6 2 8 4 2 0 1 7 2 9
Element value of array in ascending order
0 1 2 2 2 4 6 7 8 9
```

PROBLEM #02

Create a program that will convert a decimal number (positive value) to its equivalent binary number.

- Use array for binary values

EXAMPLE PROGRAM OUTPUT:

```
Enter a decimal number: 10
Binary equivalent: 1010
```

```
Enter a decimal number: 67
Binary equivalent: 1000011
```

PROBLEM #03

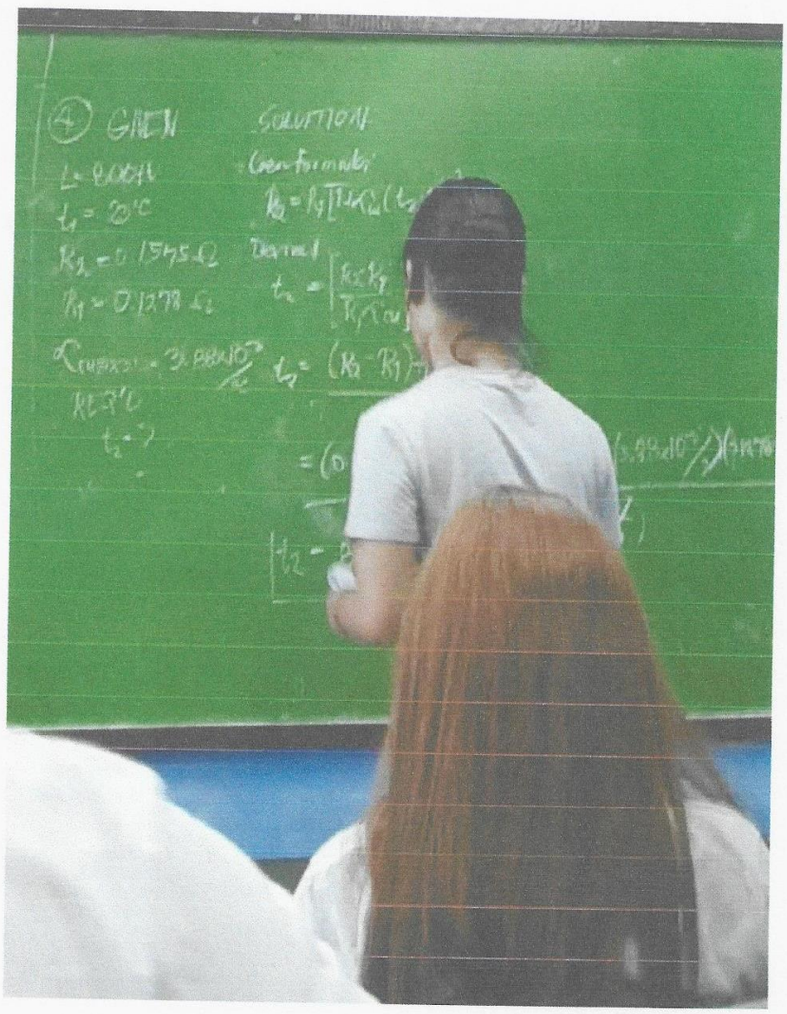
Create a program that will ask the user to enter 10 numbers and display the 1st and 2nd to highest number and 1st and 2nd to the lowest number.

- Don't use array sorting

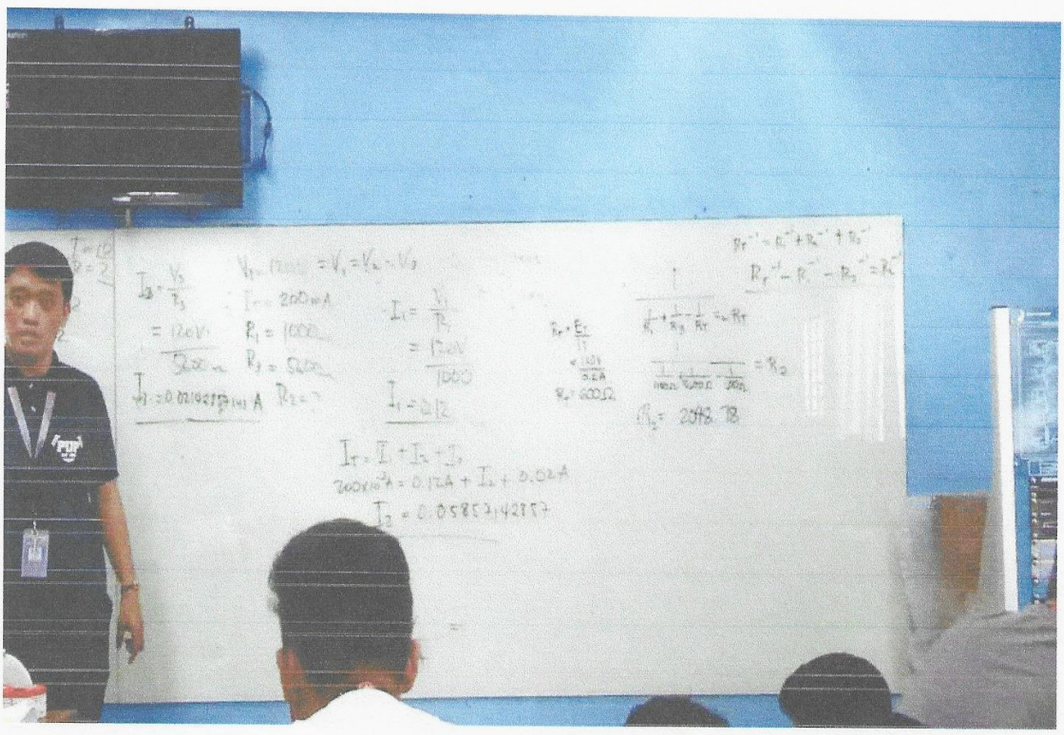
EXAMPLE PROGRAM OUTPUT:

```
Enter ten numbers:
4 2 8 10 9 2 5 5 1 7

first to the highest: 10
second to the highest: 9
first to the lowest: 1
second to the lowest: 2
```

```
Enter ten numbers:
10 88 19 35 35 5 99 7 34 100

first to the highest: 100
second to the highest: 99
first to the lowest: 5
second to the lowest: 7
```



A student solving and explaining a circuit problem



A professor teaching a lesson to his class

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POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
COLLEGE OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

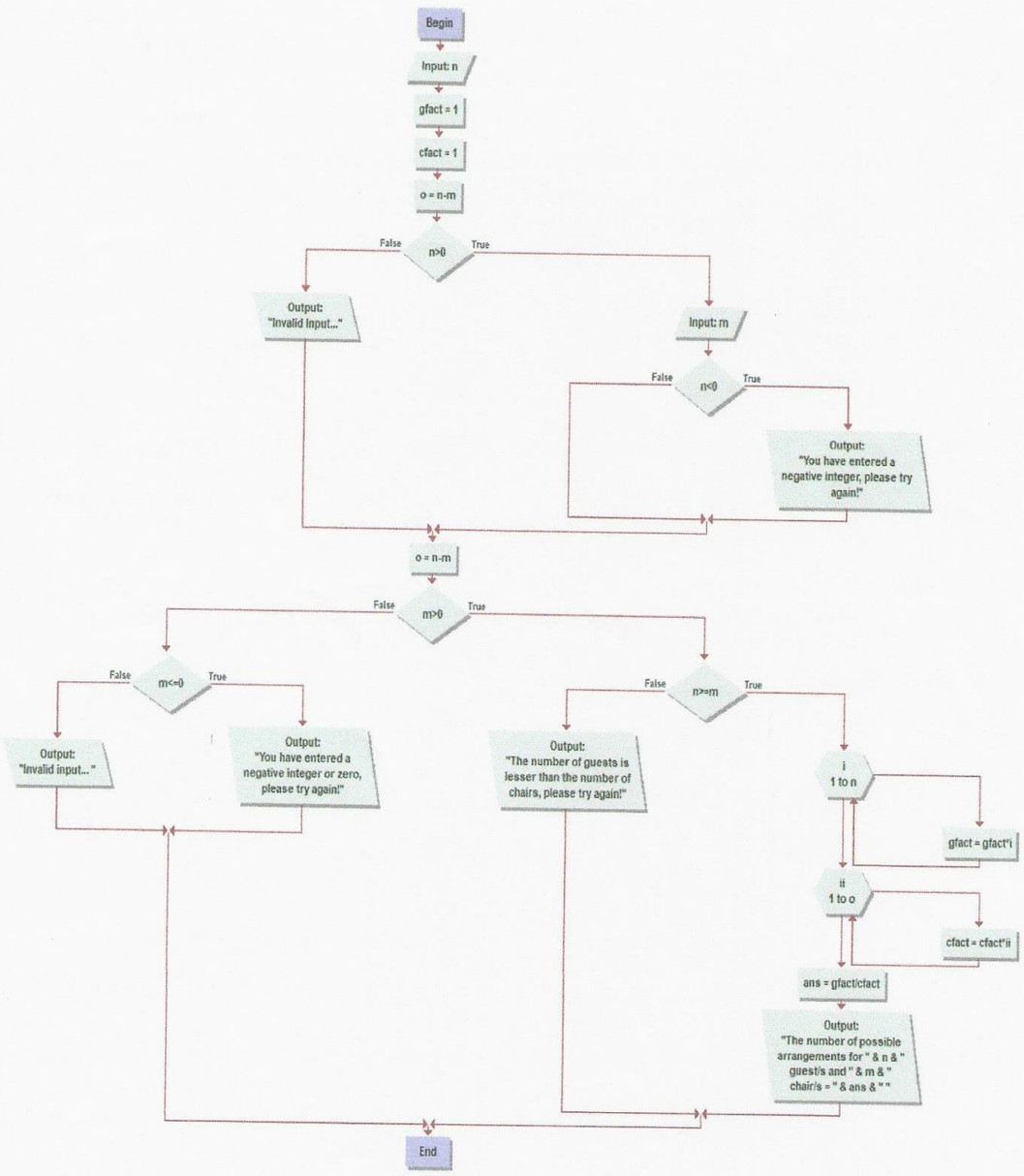
Programming, Logic, and Design

(Written Report)
Ma. Leona S. Khan

Scarlet Raven
"The ravens are Prog-roaming in the night sky"
BSCpE 1-1
David Jan A. Afalla
Janella T. Cuevas
Vince Jeremy T. Ladion
Jay Anton V. Roblico
Mark Christer Salamante

3Θ. A program that calculates the number of possible arrangements for any number of guests and any number of chairs. (Assume there will never be fewer guests than chairs).

Flow chart made in Visual Logic application:



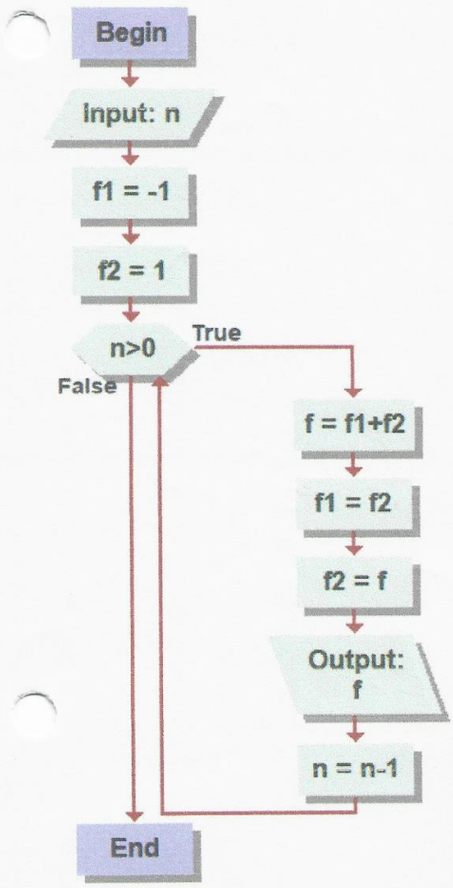
Source code made with DevC++ application:

```
#include <iostream>
using namespace std;

int main()
{
    int i, ii, n, m, o, ans, gfact = 1, cfact = 1;

    cout <<"Enter the number of guests: ";
    cin >> n;
    if (n>0)
    {
        cout <<"Enter the number of chairs (must be lesser than the number of guest): ";
        cin >> m;
    }
    else if (n<0)
    {
        cout << "You have entered a negative integer, please try again!";
        return 0;
    }
    else
    {
        cout << "Invalid Input. . .";
        return 0;
    }
    o = n-m;

    if (m>0)
    {
        if (n>m)
        {
            for (i = 1; i<=n; ++i)
            {
                gfact *= i;
            }
            for (ii= 1; ii<=o; ++ii)
            {
                cfact *= ii;
            }
                ans = gfact / cfact;
                cout << "The number of possible arrangements for " <<n<< " guest/s and " <<m<< " chair/s = " <<ans<< "  " <<endl;
        }
        else if (n<m)
        {
            cout << "The number of guest is lesser than the number of chairs, please try again!";
        }
        else if (n=m)
        {
            for (i = 1; i<=n; ++i)
            {
                gfact *= i;
            }
            cout << "The number of possible arrangements for " <<n<< " guest/s and " <<m<< " chair/s = "<<gfact<<endl;
        }
    }
    else if (m<=0)
    {
        cout << "You have entered a negative integer or zero, please try again!";
    }
    else
    {
        cout << "Invalid Input. . .";
    }
        return 0;
}
```

```
C:\Users\Jay Anton V. Roblico\Desktop\Programming\Long Quiz\SourceCodes\G...
Enter the number of guests: 6
Enter the number of chairs (must be lesser than the number of guest): 4
The number of possible arrangements for 6 guest/s and 4 chair/s = 360

--------------------------------
Process exited after 5.149 seconds with return value 0
Press any key to continue . . .
```

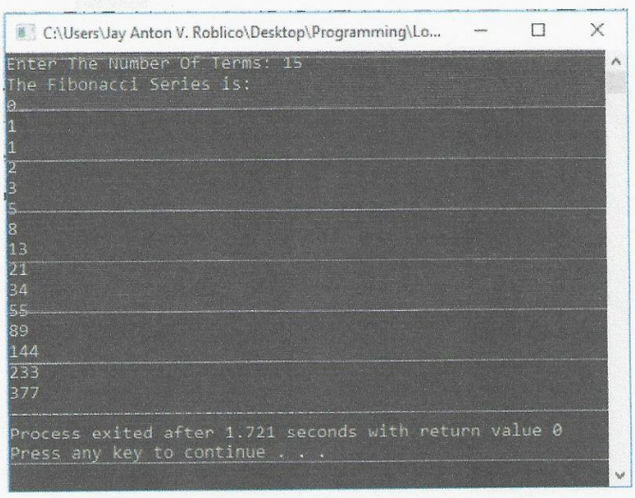
7Θ. A program that will simulate the Fibonacci Series from the start to the nth term.

Flow chart made with Visual Logic application:



Source code made with DevC++ application:

```
1   #include<iostream>
2
3   using namespace std;
4
5   int main()
6   {
7       int n, f, f1=-1, f2=1;
8
9       cout << "Enter The Number Of Terms: ";
10      cin >> n;
11      cout<<"The Fibonacci Series is:";
12
13      while(n>0)
14      {
15          f=f1+f2;
16          f1=f2;
17          f2=f;
18          cout<<"  \n"<<f;
19          n--;
20      }
21
22      return 0;
23  }
```



A group of students defensing their thesis In front of the panels

A group of students reporting their topic in front of their class

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