Name (Arabic):_____ **Class:** _____

FCIS – Ain Shams University
Subject: CSW150– Structured Programming
Exam: (Midterm) 21/3/2018
Year: (Spring term) 1st Year undergraduate

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Instructor: Dr.Sally S.Ismail
Offering Dept.: Bioinformatics Program
Academic year: 2017-2018
Duration: 45 mints

Answer the following 3 questions: **(Total marks: 15)**

QUESTION (1) True/False. An explanation is required for false answers	**(3 points)**	**5-mints**	**Grade**

(a) The statement
`struct my_struct`
`{ int num1, num2;`
`char signs[3];`
`double result;`
`};`
allocates 20 bytes in memory. **(F)**
			0.5

Answer: Struct definition allocates **ZERO bytes** in memory			**0.5**
(b) It is the compiler's task to create the executable file for your program. **(F)**			**0.5**
Answer: → It is the compiler's task to create the **object code** for your program. or → It is the compiler's task to **detect syntax errors** for your program.			**0.5**

(c) The output of the following code scrap is **3.** **(T)**
`int my2DArr[][3]= {{1,2,3},{4,5,6}};`
`cout<<my2DArr[0][2];`
			1

Answer: NO EXPLANATION IS REQUIRED HERE			
QUESTION (2) Code Design	**(4 points)**	**10-mints**	
What is the output from the following Pseudocode fragment?			

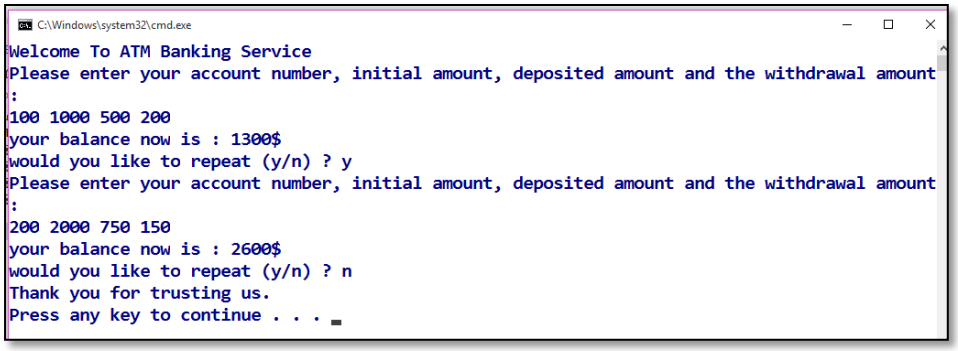
REPEAT (numOfElements - 1) times
SET the first unsorted element as the m
FOR each of the unsorted elements
IF element > currentM
THEN set element as new m
ENDIF
ENDFOR
	Input: 4 2 1 5 7 9
	Output: 9 7 5 4 2 1
	Partial sorting descendingly → (2)
	Ascending sorting → (2)
			4

QUESTION (3) Code Development	**(8 points)**	**20-mints**	

Name (Arabic):_____ **Class:** _____

Develop an "*Automatic Teller Machine (ATM) Service*" program that **reads** from the user **bank account information (account number, initial amount, deposit and withdrawal)** and displays the final **amount of money in the balance**. Your Program should define a **struct** for the client information and should repeat the process for many clients until the user asks it to quit using **sentinel value 'n'**.

Sample Run:



Answer:

Main source file

```
#include <iostream>
using namespace std;
struct ATM
{
	int AccNumber;
	double Initamount;
	double withdrawal;
	double deposit;
	double amount;
}client;
void main ()
{
char choice;
cout<<"Welcome To ATM Banking Service"<<endl;
do
{
	cout<<"Please enter your account number,
	initial amount, deposited amount and the
	withdrawal amount:"<<endl;
	cin>>client.AccNumber>>client.Initamount
	   >>client.deposit>>client.withdrawal;
	client.amount=client.Initamount+client.de
posit-client.withdrawal;
	cout<<"your balance now is :
"<<client.amount<<"$"<<endl;
	cout<<"would you like to repeat (y/n) ?
";
	cin>>choice;
}while(choice=='y');
	cout<<"Thank you for trusting us."<<endl;
}
```

- **Program outline (#,main..etc) →(1)**
- **User Friendly output msgs (at least one)→ (1)**
- **Struct definition→(1)**
- **Variable declaration + professional names → (1)**
- **Sentinel value loop →(1)**
- **Input client info →(1)**
- **Balance equation →(1)**
- **Output →(1)**

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With My Best Regards,

Sally S. ISmail