Question 2 (6 marks)

We define an Employee as shown in the following UML class diagram.

Employee
-id: integer -nbHours: integer -category: integer -ratePerHour: integer -Salary: integer
+readEmployee() +computeSalary(): integer

We want to implement the Employee struct with the following constraints:

- The employee belong ONLY to *category* 1 or 2.
- *ratePerHour* is 250 for category 1 and 300 for category 2.
- *nbHours* that an employee should work per month is either 30 or 32.

1. Write the Employee structure.
2. Write the procedure *readEmployee* that reads the four first fields of an employee,
3. Write the function *computeSalary* that computes the salary of an employee. Note that the function *computeSalary* should be called inside the procedure *readEmployee*. *readEmployee* accepts only **valid data**.

Answer:

```
typedef struct Employee{
    int id;
    int nbhours;
    int category;
int ratePerhour;
    int salary;
};employee;
intcompatesalary(employee e){
    int sal = e.nbhours * e.ratPerhour;
    return sal;
```

Question 3 (4 marks)

- Write a procedure *findMinMax* that gives the location of the min value and the max value in an array of integer. The array has MAXSIZE cells and only nb cells were filled.

Answer:

```
Void FindminMax (Int arr[], Int nb, Int *max, Int *min){
Int tempMax = arr[0];
Int tempMin = arr[0] ; Int i=0 ; *max=0; *min= 0;
For(i=0; i<nb ; i++) {
   IF(arr[i] >tempMax) {
     tempMax=arr[i];
    *Max=i ;
                    }
   IF(arr[i]<tempMin) {
    tempMin = arr[i];
   *min= i;
                    }
```

4

Question 1 (5 marks)

What is the output of the following code :

code	Output result

`#include <stdio.h>`
`int fun(int n) {`
`  int i, j, sum = 0;`
`  for(i = 1;i<=n;i++)`
`  for(j=i;j<=i;j++)`
`  sum=sum+j;`
`  return(sum);`
`}`
 	
`int main() {`
`  printf("%d", fun(4));`
`  return 0;`
`}`
	10

`#include <stdio.h>`
 	
`int main() {`
`  int a = 50, b = 60, c;`
`  c = a /* Will this comment work? */ + b;`
`  printf("%d /* And this? */ \n", third);`
`  return 0;`
`}`
	110

`int main() {`
`  int a[10];`
`  printf("%d",*a+1-*a+3);`
`  return 0;`
`}`
	(a[0]+1) - a[0] +3
	value of a[0]+1 - a[0] +3

Question 1: (10 marks) What is the output of this C snippet code

Code	Answer (2 Marks each a
1. void main() { 2. int x = 0, y = 0, z = 1; 3. int a = ++x && (y || z--); 4. printf("%d", a); 5. }	0
1. void main() { 2. int x = 5, z ; 3. printf(" %d\n", sizeof(++x+z)); 4. printf(" %d\n", x); 5. }	
1. int main() { 2. int x; 3. float y; 4. y = x = 7.5; 5. printf("x=%d y=%f", x, y); 6. }	
1. void main() { 2. int k = 8; 3. int m = 7; 4. int z = --k < m ? --k : ++m; 5. printf("%d", z); 6. }	7

1. int compute(char *s){
2. int i = 0;
3. while(*s!='\0')
4. {++i; s++;}
5. return (i);
6. }
7. int main() {
8. char d[] = "KSUniversity";
9. printf("res = %d\n", compute(d));
10. return 0;
11. }	

Question 2: (6 marks) A book is defined by its title, author, publisher and ISBN whi number.

1- Write the data structures needed to define a stack of books.(3 Marks)
2- Write only the signatures of its related pop, push and peek methods. (3