Course: 230 MC103

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Course Title: Programming & Problem Solving
Laboratory

Assignment 01

Part A

Ques 1. (b) compilation error
Ques 2. (a) call by value
Ques 3. (b) real
Ques 4. (b) name+7
Ques 5. (c) None of the above

Ques 6. (c) Happ
Ques 7. (a) 50
Ques 8. (c) do-while
Ques 9. (c) %d
Ques 10. (b) 50 How are you?

Part B

Ques 1.   comparing structures and unions

```c
#include <stdio.h>
typedef struct {
    int integer; char character; float real value;} lab 01 structure;

typedef union {
    int integer; char character; float real value;} lab 01 union;

int main() {
    lab 01 structure structure = { 5,'A',3.4f};
    lab 01 union union type = { 7};

    printf("structure: %d\n", structure.character); // 7

    printf("structure: %d\n", sizeof(structure)); // 4
    printf("union: %d\n", sizeof(union type)); // 12

    return 0;

}
```

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Ques 2.   print name and age

```c
#include<stdio.h>
int main(){
    int age; char name[30];
    printf("Enter the name of the person: ");
    gets(name);
    printf("Enter the age of the person: ");
    scanf("%d", &age);
    for(int i=0; i<age; i++) printf("%s \n", name);
    return 0;
}
```

Ques 3.   calculate price & discount

```c
#include<stdio.h>
float calculateDiscount(float price){
    float discount = 0.8;
    if(price<1000) discount = price * 0.05;
    else if(price < 5000) discount = price * 0.1;
    else discount = price * 0.15;
    return discount;
}
int main(){
    char option='N'; float total_price =0;
    do{ float price; int num_items;
        scanf("%f", &price); scanf("%d", &num_items);
        total_price = total_price + (price * num_items);
        printf("More Items? (Y/N): "); fflush(stdin);
        scanf("%c", &option);
    } while(option == 'Y' || option=='y');
    printf("Discount is %f.", calculateDiscount(total_price));

    return 0;
}
```

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Ques 4.   consecutive 3 'a'

```c
#include <stdio.h>
#include <string.h>
void consecutive_A_in_String(char* str){
        int i=0, count= 0;
        while (str[i] != '\0'){
                if(str[i] == 'a') count +=1;
                else count = 0;
                if(count >= 3) {
                        printf("YES"); return;
                }
        }
        printf("No");
}
int main(){
    char str[100]; gets(str);
    consecutive_A_in_String(str); return 0;
}
```

Ques 5.   Armstrong Number

```c
#include <stdio.h>
int checkArmstrong (int num) {
        int real_num =num , sum= 0;
        while (num!=0) {
                int temp = num%10; num = num/10;
                sum+= temp * temp * temp;
        }
        return sum == real_num;
}

int main(){
        int num;
        printf("Enter number:  "); scanf("%d",&num);
        if (checkArmstrong(num))
                printf("Number is Armstrong number");
        else
                printf("Number isn't Armstrong number");
        return 0;
}
```