

Institute of Computer Technology
B. Tech. Computer Science and Engineering

Sub: ESFP – I

Course Code: 2CSE102

Practical – 1

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Roll No: BDA-08

Branch: BDA

Class: B

Batch: 14

[Q-1] Problem Definition: (Part-1)

Method using a third variable:

Sam decides to implement the method using a third variable. He has two integer variables, x and y, with initial values x = 10 and y = 20. Write a C program to help Sam swap the values of x and y using a third variable, and then display the new values.

ALGORITHM:

Step 1:- Start

Step 2:- We are given to variables x and y.

Step 3:- and a 3rd variable z.

Step 4:- use the third variable method .

Step 5:- Print the exchanged value of x and y variable.

Step 6:- End

Solution:

Code:-

```
#include <stdio.h>
```

```
void main()
```

```
{
```

```
    int x=10;
```

```
    int y=20;
```

```
    int z;
```

```
    printf("the actual value of x and y are:- %d and %d",x,y);
```

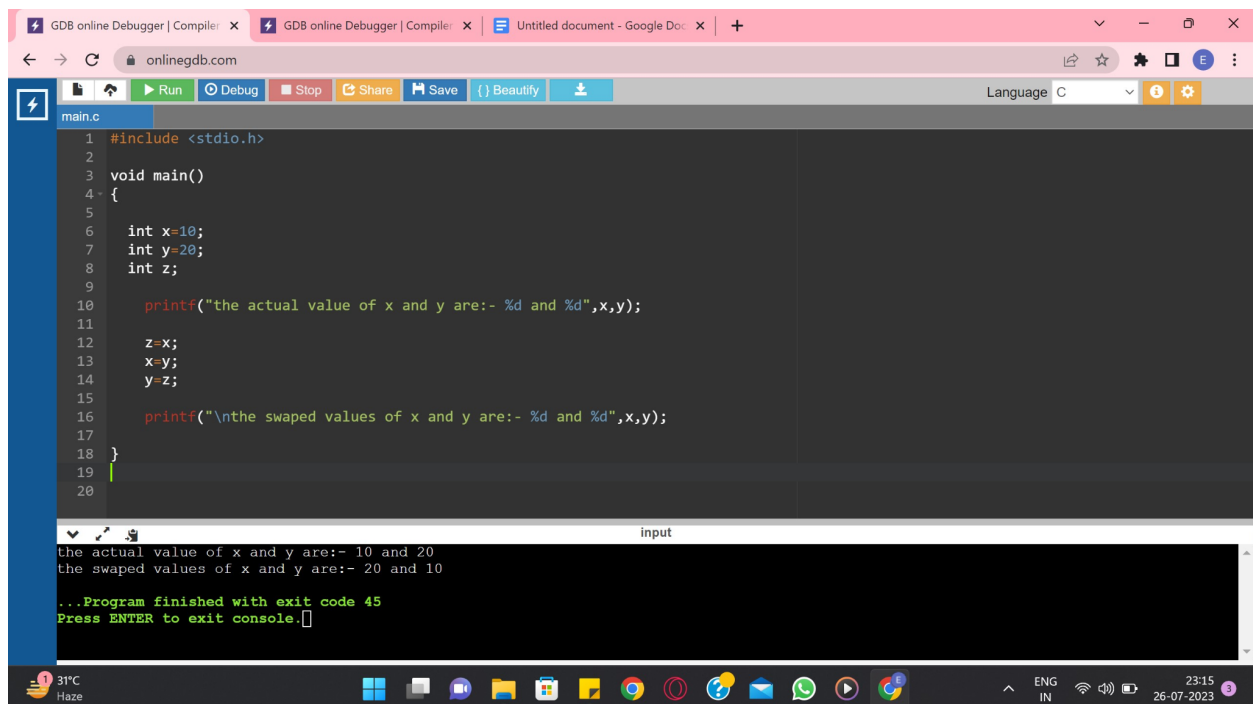
```
    z=x;
```

```
    x=y;
```

```
    y=z;
```

```
    printf("\n the swapped values of x and y are:- %d and %d",x,y);
```

```
}
```



The screenshot displays a web browser window with the URL `onlinegdb.com`. The browser's address bar shows the site name and a search icon. The page title is "GDB online Debugger | Compiler". The main content area shows a C program being executed. The code is as follows:

```
1 #include <stdio.h>
2
3 void main()
4 {
5
6     int x=10;
7     int y=20;
8     int z;
9
10    printf("the actual value of x and y are:- %d and %d",x,y);
11
12    z=x;
13    x=y;
14    y=z;
15
16    printf("\n the swapped values of x and y are:- %d and %d",x,y);
17
18 }
19
20
```

The output of the program is shown in the console window at the bottom:

```
the actual value of x and y are:- 10 and 20
the swapped values of x and y are:- 20 and 10
...Program finished with exit code 45
Press ENTER to exit console.
```

The browser's taskbar at the bottom shows the system clock as 23:15 on 26-07-2023, and the temperature as 31°C. The taskbar also includes icons for various applications like a file explorer, a terminal, and a web browser.

Problem Definition:(Part-2)

Method without using a third variable:

Emily prefers an approach that doesn't use an additional variable to swap the values. She also has two integer variables, a and b, with initial values a = 5 and b = 8. Write a C program to assist Emily in swapping the values of a and b without using a third variable, and then display the updated values.

ALGORITHM:

Step 1:- Start

Step 2:- We are given to variables x and y.

Step 3:- and a 3rd variable z.

Step 4:- use the arithmetic method .

Step 5:- Print the exchanged value of x and y variable.

Step 6:- End

Solution:

Code:-

```
#include <stdio.h>
```

```
void main()
```

```
{
```

```
    int x=10;
```

```
    int y=20;
```

```
    printf("the original value of x and y are:- %d and %d",x,y);
```

```
    //using arithmetic operation.
```

```
    x=x+y;
```

```

y=x-y;
x=x-y;

printf("\nthe swapped vaule of x and y are:- %d and %d",x,y);
}

```

The screenshot shows a web browser with the URL 'onlinegdb.com'. The page contains a C program in a text editor. The program defines a function 'main' that declares two integers, 'x' and 'y', with initial values of 10 and 20 respectively. It then prints the original values. Using arithmetic operations, it swaps the values: $x = x + y$, $y = x - y$, and $x = x - y$. Finally, it prints the swapped values. The output window shows the execution results: 'the original vaule of x and y are:- 10 and 20' and 'the swapped vaule of x and y are:- 20 and 10'. The program finished with exit code 45.

```

1 #include <stdio.h>
2
3
4 void main()
5 {
6     int x=10;
7     int y=20;
8
9     printf("the orignal vaule of x and y are:- %d and %d",x,y);
10
11     //useing arithmetic progration.
12
13     x=x+y;
14     y=x-y;
15     x=x-y;
16
17     printf("\nthe swapped vaule of x and y are:- %d and %d",x,y);
18 }
19

```

input

```

the original vaule of x and y are:- 10 and 20
the swapped vaule of x and y are:- 20 and 10
...Program finished with exit code 45
Press ENTER to exit console.

```

[Q-2] Problem Definition:(part-1)

Charlie invests \$2000 in a fixed deposit account with a bank that offers a simple interest rate of 4% per annum. Calculate the total amount Charlie will have after 3 years. Assume that the interest is calculated annually.

$$\text{Simple Interest (SI)} = (\text{Principal} * \text{Rate} * \text{Time}) / 100$$

ALGORITHM:

Step 1:- Start

Step 2:- We are given principal , rate and time.

Step 3:- with that we can find simple interest.

Step 4:- use the simple interest formula.

Step 5:- Print the final value of the interest.

Step 6:- and the end product is added with the principal amount.

Solution:

Code:-

```
#include <stdio.h>
```

```
void main()
```

```
{
```

```
    float p;
```

```
    float r;
```

```
    float t;
```

```
    float total;
```

```
    printf("Enter the principal value\t");
```

```
    scanf("%f",& p);
```

```
    printf("Enter the the percentag rate per anum\t");
```

```
    scanf("%f",& r);
```

```
    printf("Enter the time of the fixed deposit\t");
```

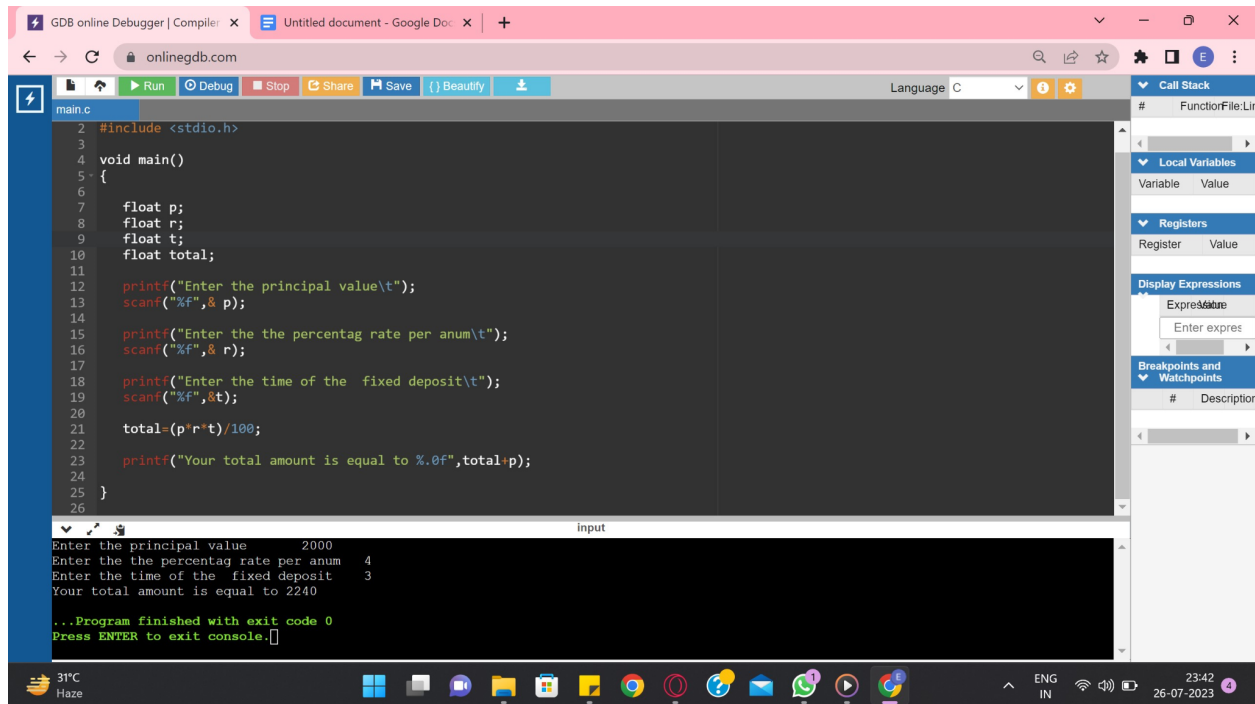
```
    scanf("%f",&t);
```

```
// this is Simple Interest.
```

```
    total=(p*r*t)/100;
```

```
    printf("Your total amount is equal to %.0f",total+p);
```

}



```
main.c
2 #include <stdio.h>
3
4 void main()
5 {
6     float p;
7     float r;
8     float t;
9     float total;
10
11     printf("Enter the principal value\t");
12     scanf("%f",&p);
13
14     printf("Enter the the percentag rate per anum\t");
15     scanf("%f",&r);
16
17     printf("Enter the time of the fixed deposit\t");
18     scanf("%f",&t);
19
20     total=(p*r*t)/100;
21
22     printf("Your total amount is equal to %.0f",total,p);
23
24 }
25
26
```

input

```
Enter the principal value      2000
Enter the the percentag rate per anum      4
Enter the time of the fixed deposit      3
Your total amount is equal to 2240
...Program finished with exit code 0
Press ENTER to exit console.[]
```

[Q-2] Problem Definition:(part-2)

James invests \$1500 in a savings account with a bank that offers a compound interest rate of 5% per annum. Calculate the total amount James will have after 4 years. Assume that the interest is compounded annually.

ALGORITHM:

Step 1:- Start

Step 2:- We are given principal , rate and time.

Step 3:- with that we can find simple interest.

Step 4:- use the compound interest formula.

Step 5:- Print the final value of the interest.

Step 6:-End.

Solution:

Code:-

```
#include <stdio.h>
#include <math.h>
void main()
{

    float p;
    float r;
    float t;
    float total;

    printf("Enter the principal value\t");
    scanf("%f",& p);

    printf("Enter the the percentag rate per anum\t");
    scanf("%f",& r);

    printf("Enter the time of the fixed deposit\t");
    scanf("%f",&t);

    // this is Compound Interest.
    total=p*pow(1+r/100,t)-p;

    printf("Your total amount is equal to %.0f",total);

}
```

```
1 #include <stdio.h>
2 #include <math.h>
3 void main()
4 {
5
6     float p;
7     float r;
8     float t;
9     float total;
10
11     printf("Enter the principal value\t");
12     scanf("%f",& p);
13
14     printf("Enter the the percentag rate per anum\t");
15     scanf("%f",& r);
16
17     printf("Enter the time of the fixed deposit\t");
18     scanf("%f",&t);
19
20     // this is Compound Interest.
21     total=p*pow(1+r/100,t)-p;
22
23     printf("Your total amount is equal to %f",total);
24 }
```

input

```
Enter the principal value      1500
Enter the the percentag rate per anum    5
Enter the time of the fixed deposit      4
Your total amount is equal to 323.259033

...Program finished with exit code 0
Press ENTER to exit console.
```

[Q-3] Problem Definition:

As a recent computer science graduate, you are preparing to apply for your dream job in a software development company. You want to showcase your skills and accomplishments by printing your resume using C programming. Print your resume with all the necessary details. Print your resume exactly as shown below and format the resume with proper spacing and alignment. Make sure to replace the placeholders with your actual details.

ALGORITHM:

Step 1:- Start

Step 2:- We are given subjects on which we need to write a resume.

Step 3:- with that we can write details on our resume.

Step 4:- use the 'printf' command.

Step 5:-End.

Solution:

Code:

```
#include <stdio.h>
```

```
void main()
```

```
{
```

```
    printf("-----\n ");
```

```
    printf("Name:- Dwij desai\n ");
```

```
    printf("Address:- 10, Mahesh-Naresh
```

```
Society,Ahmedabad\n ");
```

```
    printf("Email:-
```

```
dwijdvd@gmail.com\n ");
```

```
    printf("Phone:-(+91)81549xxxxx\n
```

```
");
```

```
    printf("-----\n ");
```

```
    printf("\n\n\n");
```

```
    printf("Objective:\n");
```

```
    printf("To work with the organisation for the growth of  
organisation as a whole and my career enhancement. To have a  
experience of working team. In To see me grow financial in coming  
few years\n");
```

```
    printf("\n\n\n");
```

```
    printf("Education:\n");
```

```

printf("      |-----|\n");
printf("      | Name of the uni. | Year of graduation | qualification
\n");
printf("      |-----|\n");
printf("      |Ganpat university |   2027,May   |   B.Tech   |\n");
printf("      |Ganpat university |   2030,May   |   M.Tech   |\n");
printf("      |-----|\n");
printf(" City of graduation:- Ahmedabad\n");
printf("\n\n\n");
printf("Skill:\n");
printf("      - Programming Languages: C , C++ , Python and Java
Languages ");
printf("      - Web Development: I am well versed in frontend
Development,such an example is site named'yat\n");
printf("      - Database: I am well versed in data analytics and data
management");
printf("      - Operating Systems: I have studied little bit on OS from
the time i have spend in collage\n");
printf("\n\n\n");
printf("Projects:\n");
printf("      -Project(1):- Area analytics, \n");
printf("                  This helps you analyze the area of a spasific
shapes.\n");
printf("                  This was made using C Language with the use
of '#include<math.h> and the shape's formula.\n");
printf("\n\n");
printf("      -Project(2):- Game engine,\n");
printf("                  This help you make games easily and it is
support's C# Language.\n");
printf("                  This ueses C and python Languages and is
more compatable with visual studio.\n");
printf("\n\n");

```

```

printf("Work Experience:\n");
printf("        -->I have worked at 'Microspak'\n");
printf("        -->As a frontend devloper\n");
printf("    Duration-->started in 2030,june and Quit in
2033,february");
printf("        -->I was a jonier in web Development");
printf("\n\n");
printf("Achievements:\n");
printf("        -->!st price in event named 'Bounty GO'\n");
printf("        -->founder of 'Popsslot' Game engine\n");
printf("-----\n");
}

```

```

-----
Name:- Dewi Dewi
Address:- 3D, Mahesh-Surendh Society,Ahmedabad
Email:- DewiDewi@gmail.com
Phone:- (+91)8154xxxxx
-----

Objective:
To work with the organisation for the growth of organisation as a whole and my career enhancement. To have a experience of working team. In To see me grow financial in coming few years

Education:
-----
| Name of the uni. | Year of graduation | qualification |
|-----|-----|-----|
| Dangat university | 2027,May | B.Tech |
| Dangat university | 2030,May | B.Tech |
|-----|-----|-----|
City of graduation:- Ahmedabad

Skill:
- Programming Languages: C , C++ , Python and Java Languages
- Database: I am well versed in data analytics and data management
- Web Development: I am well versed in frontend Development,such an example is site named'net'
- Operating Systems: I have studied little bit on OS from the time I have spend in collage

Projects:
-Project(1):- Area analytics,
This helps you analyzes the area of a specific shapes.
This was made using C language with the use of 'MinkotsCmath.h' and the shape's formula.

-Project(2):- Game engine,
This helps you make game easily and it is support's C# Language.
This uses C and python Languages and is more compatible with visual studio.

Work Experience:
-->I have worked at 'Microspak'
-->As a frontend devloper
Duration-->started in 2030,june and Quit in 2033,february
-->I was a jonier in web Development

Achievements:
-->1st price in event named 'Bounty GO'
-->founder of 'Popsslot' Game engine
-----

...Program finished with exit code 100
Press ENTER to exit console.

```

```
1 #include <stdio.h>
2
3 void main()
4 {
5     printf("-----\n");
6     printf("Name:- DwiJ Desai\n");
7     printf("Address:- 1B, Mahesh-Burush Society,Ahmedabad\n");
8     printf("Email:- dwijdw@gmail.com\n");
9     printf("Phone:- (+91)8154xxxxxx\n");
10    printf("-----\n");
11
12    printf("\n\n");
13    printf("Objectives:\n");
14    printf("To work with the organisation for the growth of organisation as a whole and my career enhancement. To have a experience of working team. In To see me grow financial in coming few years\n");
15    printf("\n\n");
16    printf("Education:\n");
17    printf("-----\n");
18    printf("Name of the uni. | Year of graduation | qualification\n");
19    printf("-----\n");
20    printf("Ganpat university | 2022,May | B.Tech\n");
21    printf("Ganpat university | 2020,May | M.Tech\n");
22    printf("-----\n");
23    printf("City of graduation:- Ahmedabad\n");
24    printf("\n\n");
25    printf("Skills:\n");
26    printf("-----\n");
27    printf("Programming Languages: C , C++ , Python and Java Languages\n");
28    printf("Web Development: I am well versed in frontend Development,such an example is site named'yat'\n");
29    printf("Database: I am well versed in data analytics and data management\n");
30    printf("Operating Systems: I have studied little bit on OS from the time i have spend in collage\n");
31    printf("\n\n");
32    printf("Projects:\n");
33    printf("-----\n");
34    printf("Project(1):- Area analytics, \n");
35    printf("This helps you analyze the area of a spatific shapes.\n");
36    printf("This was made using C language with the use of 'includecmath.h' and the shape's formula.\n");
37    printf("\n\n");
38    printf("Project(2):- Game engine,\n");
39    printf("This help you make games easily and it is support's C language.\n");
40    printf("This uses C and python languages and is more computable with visual studio.\n");
41    printf("\n\n");
42    printf("Work Experience:\n");
43    printf("-----\n");
44    printf("I have worked at 'Microspak'\n");
45    printf("As a frontend developer\n");
46    printf("Duration--started in 2020,june and Qait in 2023,february\n");
47    printf("I was a junior in web Development\n");
48    printf("\n\n");
49    printf("Achievements:\n");
50    printf("-----\n");
51    printf("Ist prize in event named 'Bounty GO'\n");
52    printf("founder of 'Popslot' Game engine\n");
53    printf("-----\n");
54 }
```

[Q-4] Problem Definition:

You are a student who has just received their 12th-grade mark sheet. The mark sheet contains the marks obtained in five subjects: Physics,Chemistry, Mathematics, English, and Biology. You want to calculate your aggregate marks and percentage to assess your performance in the exams. To do this, you decide to develop a logic to automate the calculation process.

ALGORITHM:

Step 1:- Start

Step 2:- We are given 5 subjects .

Step 3:- with that we can ask the user marks of each subject.

Step 4:- use the 'percentag' formula we can find the percentage.

Step 5:- Print the final value of the total marks of 5 subjects.

Step 6:- and also in the end we get a percentage of the 5 subjects.

Solution:

Code:-

```
#include <stdio.h>
```

```
void main()
```

```
{
```

```
    float Physics;
```

```
    float Chemistry;
```

```
    float Mathematics;
```

```
    float English;
```

```
    float Biology;
```

```
    float total;
```

```
    float percentag;
```

```
    printf("Physics marks-");
```

```
    scanf("%f",& Physics);
```

```
    printf("Chemistry marks-");
```

```
    scanf("%f",& Chemistry);
```

```
    printf("Mathematics marks-");
```

```
    scanf("%f",& Mathematics);
```

```
    printf("English marks-");
```

```
    scanf("%f",& English);
```

```
    printf("Biology marks-");
```

```
    scanf("%f",& Biology);
```

```
total=Physics+Chemistry+Mathematics+English+Biology;
```

```
printf("Your total is- %f\t",total);
```

```
percentag=(total*100)/500;
```

```
printf("Your percentag is- %f\t",percentag);
```

```
}
```

The screenshot displays the GDB online Debugger interface. The main window shows the source code of a C program named 'main.c'. The code prompts the user to enter marks for five subjects: Physics, Chemistry, Mathematics, English, and Biology. It then calculates the total marks and the percentage. The input values entered are: Physics marks=78, Chemistry marks=89, Mathematics marks=56, English marks=70, and Biology marks=92. The output shows the total marks as 385.000000 and the percentage as 77.000000. The program finished with exit code 0.

```
15 printf("Physics marks-");
16 scanf("%f",& Physics);
17
18 printf("Chemistry marks-");
19 scanf("%f",& Chemistry);
20
21 printf("Mathematics marks-");
22 scanf("%f",& Mathematics);
23
24 printf("English marks-");
25 scanf("%f",& English);
26
27 printf("Biology marks-");
28 scanf("%f",& Biology);
29
30 total=Physics+Chemistry+Mathematics+English+Biology;
31
32 printf("Your total is- %f\t",total);
33
34 percentag=(total*100)/500;
35
36 printf("Your percentag is- %f\t",percentag);
37
```

input

```
Physics marks=78
Chemistry marks=89
Mathematics marks=56
English marks=70
Biology marks=92
Your total is- 385.000000    Your percentag is- 77.000000
...Program finished with exit code 0
Press ENTER to exit console.
```