**1.** ***Enter the marks of 5 students in Chemistry, Mathematics and Physics (each out of***

***100) using a structure named Marks having elements roll no., name, chem\_marks,***

***maths\_marks and phy\_marks and then display the percentage of each student.***

***(i) using structure variable:-***

#include <stdio.h>

#include<string.h>

struct mark

{

int rn;

char name[20];

float chem,math,phy;

float per;

}m1,m2,m3,m4,m5;

int main() {

int percentage ;

printf("ENTER DETAILS OF FIRST STUDENT!!!!!!!\n");

printf("enter the roll no student: ");

scanf("%d",&m1.rn);

printf("Name of the student: ");

scanf("%s",m1.name);

printf("enter marks of Chemistry: ");

scanf("%f",&m1.chem);

printf("enter marks of Mathematics: ");

scanf("%f",&m1.math);

printf("enter marks of Physics: ");

scanf("%f",&m1.phy);

printf("\nENTER DETAILS OF SECOND STUDENT!!!!!!!\n");

printf("enter the roll no student: ");

scanf("%d",&m2.rn);

printf("Name of the student: ");

scanf("%s",m2.name);

printf("enter marks of Chemistry: ");

scanf("%f",&m2.chem);

printf("enter marks of Mathematics: ");

scanf("%f",&m2.math);

printf("enter marks of Physics: ");

scanf("%f",&m2.phy);

printf("\nENTER DETAILS OF THIRD STUDENT!!!!!!!\n");

printf("enter the roll no student: ");

scanf("%d",&m3.rn);

printf("Name of the student: ");

scanf("%s",m3.name);

printf("enter marks of Chemistry: ");

scanf("%f",&m3.chem);

printf("enter marks of Mathematics: ");

scanf("%f",&m3.math);

printf("enter marks of Physics: ");

scanf("%f",&m3.phy);

printf("\nENTER DETAILS OF FOURTH STUDENT!!!!!!!\n");

printf("enter the roll no student: ");

scanf("%d",&m4.rn);

printf("Name of the student: ");

scanf("%s",m4.name);

printf("enter marks of Chemistry: ");

scanf("%f",&m4.chem);

printf("enter marks of Mathematics: ");

scanf("%f",&m4.math);

printf("enter marks of Physics: ");

scanf("%f",&m4.phy);

printf("\nENTER DETAILS OF FIFTH STUDENT!!!!!!!\n");

printf("enter the roll no student: ");

scanf("%d",&m5.rn);

printf("Name of the student: ");

scanf("%s",m5.name);

printf("enter marks of Chemistry: ");

scanf("%f",&m5.chem);

printf("enter marks of Mathematics: ");

scanf("%f",&m5.math);

printf("enter marks of Physics: ");

scanf("%f",&m5.phy);

m1.per= (+m1.chem +m1.math +m1.phy)/300 \*100;

m2.per= (+m2.chem +m2.math +m2.phy)/300 \*100;

m3.per= (+m3.chem +m3.math +m3.phy)/300 \*100;

m4.per= (+m4.chem +m4.math +m4.phy)/300 \*100;

m5.per= (+m5.chem +m5.math +m5.phy)/300 \*100;

printf("\nPercentage secured by first student is : %f ",m1.per);

printf("\nPercentage secured by second student is : %f ",m2.per);

printf("\nPercentage secured by third student is : %f ",m3.per);

printf("\nPercentage secured by fourth student is : %f ",m4.per);

printf("\nPercentage secured by fifth student is : %f ",m5.per);

return 0;

}

***(ii) using typedef­:-***

#include <stdio.h>

#include <string.h>

typedef struct mark

{

int rn;

char name[14];

float phy, chem, math;

float per;

} m;

m m1, m2, m3, m4, m5;

int main()

{

int percentage;

printf("ENTER DETAILS OF FIRST STUDENT.....\n");

printf("enter the roll no student: ");

scanf("%d", &m1.rn);

printf("Name of the student: ");

scanf("%s", m1.name);

printf("enter marks of physics: ");

scanf("%f", &m1.phy);

printf("enter marks of chemistry: ");

scanf("%f", &m1.chem);

printf("enter marks of mathematics: ");

scanf("%f", &m1.math);

printf("\nENTER DETAILS OF SECOND STUDENT.....\n");

printf("enter the roll no student: ");

scanf("%d", &m2.rn);

printf("Name of the student: ");

scanf("%s", m2.name);

printf("enter marks of physics: ");

scanf("%f", &m2.phy);

printf("enter marks of chemistry: ");

scanf("%f", &m2.chem);

printf("enter marks of mathematics: ");

scanf("%f", &m2.math);

printf("\nENTER DETAILS OF THIRD STUDENT.....\n");

printf("enter the roll no student: ");

scanf("%d", &m3.rn);

printf("Name of the student: ");

scanf("%s", m3.name);

printf("enter marks of physics: ");

scanf("%f", &m3.phy);

printf("enter marks of chemistry: ");

scanf("%f", &m3.chem);

printf("enter marks of mathematics: ");

scanf("%f", &m3.math);

printf("\nENTER DETAILS OF FOURTH STUDENT.....\n");

printf("enter the roll no student: ");

scanf("%d", &m4.rn);

printf("Name of the student: ");

scanf("%s", m4.name);

printf("enter marks of physics: ");

scanf("%f", &m4.phy);

printf("enter marks of chemistry: ");

scanf("%f", &m4.chem);

printf("enter marks of mathematics: ");

scanf("%f", &m4.math);

printf("\nENTER DETAILS OF FIFTH STUDENT.....\n");

printf("enter the roll no student: ");

scanf("%d", &m5.rn);

printf("Name of the student: ");

scanf("%s", m5.name);

printf("enter marks of physics: ");

scanf("%f", &m5.phy);

printf("enter marks of chemistry: ");

scanf("%f", &m5.chem);

printf("enter marks of mathematics: ");

scanf("%f", &m5.math);

m1.per = (m1.phy + m1.chem + m1.math) / 300 \* 100;

m2.per = (m2.phy + m2.chem + m2.math) / 300 \* 100;

m3.per = (m3.phy + m3.chem + m3.math) / 300 \* 100;

m4.per = (m4.phy + m4.chem + m4.math) / 300 \* 100;

m5.per = (m5.phy + m5.chem + m5.math) / 300 \* 100;

printf("\nPercentage secured by first student is : %f ", m1.per);

printf("\nPercentage secured by second student is : %f ", m2.per);

printf("\nPercentage secured by third student is : %f ", m3.per);

printf("\nPercentage secured by fourth student is : %f ", m4.per);

printf("\nPercentage secured by fifth student is : %f ", m5.per);

return 0;

}

***(iii) using array of structures:-***

#include <stdio.h>

#include <string.h>

struct mark

{

int rn;

char name[14];

float phy, chem, math;

float per;

} m[5];

int main()

{

int i;

printf("ENTER DETAILS OF STUDENT!!!!!!!\n");

for (i = 1; i <= 5; i++)

{

printf("enter the roll no of %d student :\n ", i);

scanf("%d", &m[i].rn);

printf("Name of the student: ");

scanf("%s", m[i].name);

printf("enter marks of physics: ");

scanf("%f", &m[i].phy);

printf("enter marks of chemistry: ");

scanf("%f", &m[i].chem);

printf("enter marks of mathematics: ");

scanf("%f", &m[i].math);

}

for (i = 1; i <= 5; i++)

{

m[i].per = (m[i].phy + m[i].chem + m[i].math) / 300 \* 100;

printf("\nPercentage secured by student %d is : %f ", i, m[i].per);

}

return 0;}

***(iv) using nested structure:-***

#include <stdio.h>

#include <string.h>

struct student

{

struct mark

{

int rn;

char name[14];

float phy, chem, math;

float per;

} m;

} s[5];

int main()

{

int i;

printf("ENTER DETAILS OF STUDENT.....\n");

for (i = 1; i <= 5; i++)

{

printf("\nenter the roll no of %d student:", i);

scanf("%d", &s[i].m.rn);

printf("Name of the student: ");

scanf("%s", s[i].m.name);

printf("\nenter marks of physics: ");

scanf("%f", &s[i].m.phy);

printf("enter marks of chemistry: ");

scanf("%f", &s[i].m.chem);

printf("enter marks of mathematics: ");

scanf("%f", &s[i].m.math);

}

for (i = 1; i <= 5; i++)

{

s[i].m.per = (s[i].m.phy + s[i].m.chem + s[i].m.math) / 300 \* 100;

printf("\nPercentage secured by student %d is : %f ", i, s[i].m.per);

}

return 0;

}

***(v) passing structure to function:-***

#include <stdio.h>

#include <string.h>

struct student

{

struct mark

{

int rn;

char name[14];

float phy, chem, math;

float per;

} m;

} s[5];

void show(struct student s[]);

int main()

{

int i;

printf("ENTER DETAILS OF STUDENT.....\n");

for (i = 1; i <= 5; i++)

{

printf("\nenter the roll no of %d student:", i);

scanf("%d", &s[i].m.rn);

printf("Name of the student: ");

scanf("%s", s[i].m.name);

printf("\nenter marks of physics: ");

scanf("%f", &s[i].m.phy);

printf("enter marks of chemistry: ");

scanf("%f", &s[i].m.chem);

printf("enter marks of mathematics: ");

scanf("%f", &s[i].m.math);

}

show(s);

return 0;

}

void show(struct student s[5])

{

int i;

for (i = 1; i <= 5; i++)

{

s[i].m.per = (s[i].m.phy + s[i].m.chem + s[i].m.math) / 300 \* 100;

printf("\nPercentage secured by student %d is : %f ", i, s[i].m.per);

}

return 0;

}

***(vi)using union variable:-***

#include <stdio.h>

#include <string.h>

union student

{

union mark

{

int rn;

char name[14];

float phy, chem, math;

float per;

} m;

} s[5];

int main()

{

int i;

printf("ENTER DETAILS OF STUDENT.....\n");

for (i = 1; i <= 5; i++)

{

printf("\nenter the roll no of %d student:", i);

scanf("%d", &s[i].m.rn);

printf("Name of the student: ");

scanf("%s", s[i].m.name);

printf("\nenter marks of physics: ");

scanf("%f", &s[i].m.phy);

printf("enter marks of chemistry: ");

scanf("%f", &s[i].m.chem);

printf("enter marks of mathematics: ");

scanf("%f", &s[i].m.math);

}

for (i = 1; i <= 5; i++)

{

s[i].m.per = (s[i].m.phy + s[i].m.chem + s[i].m.math) / 300 \* 100;

printf("\nPercentage secured by student %d is : %f ", i, s[i].m.per);

}

return 0;

}