**SFWRENG 2MP3 – Programming for Mechatronics - Fall 2018**

**Note: For each question, paste your code and also the screenshot of compilation & execution steps.**

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| **Exercise 1 Solution** | | **Submitted By: 400110275 – HARNEET SINGH** |
| **Ques. #** | **Answer** | |
| **#1** | #include <stdio.h>  int main()  {  int percent;  printf("Please enter course percentage to be converted into 12-point grading scale:\n");  scanf("%d", &percent);  if (percent>=0 && percent<=49){  printf("Your grade in this course is 0\n");}  else if (percent>=50 && percent<=52){  printf("Your grade in this course is 1\n");}  else if (percent>=53 && percent<=56){  printf("Your grade in this course is 2\n");}    else if (percent>=57 && percent<=59){  printf("Your grade in this course is 3\n");}    else if (percent>=60 && percent<=62){  printf("Your grade in this course is 4\n");}  else if (percent>=63 && percent<=66){  printf("Your grade in this course is 5\n");}  else if (percent>=67 && percent<=69){  printf("Your grade in this course is 6\n");}  else if (percent>=70 && percent<=72){  printf("Your grade in this course is 7\n");}  else if (percent>=73 && percent<=76){  printf("Your grade in this course is 8\n");}  else if (percent>=77 && percent<=79){  printf("Your grade in this course is 9\n");}  else if (percent>=80 && percent<=84){  printf("Your grade in this course is 10\n");}  else if (percent>=85 && percent<=89){  printf("Your grade in this course is 11\n");}  else if (percent>=90 && percent<=100){  printf("Your grade in this course is 12\n");}  else {  printf("Please enter a valid percent value between 0 and 100\n");}  return 0;  } | |
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| **#2** | int main()  {  int Year;  printf("Please enter a whole value to check for leap year\n");  scanf("%d", &Year);  if (Year%400 == 0){  printf("Leap Year\n");}  else if (Year%100 == 0){  printf("Not a leap year\n");}  else if (Year%4 == 0){  printf("Leap Year\n");}  else{  printf("Not a leap year\n");}  return 0;  } | |
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| **#3** | #include<stdio.h>  int main ()  {  int number;  printf("Please enter a number correspoding to the month (1-12): ");  scanf("%d", &number);  if (number == 1 || number==3 || number==5 || number==7 || number==9 || number==11) {  printf("31 Days\n");  }  else if (number == 4 || number==6 || number==8 || number==10 || number==12) {  printf("30 Days\n");  }  else if (number == 2) {  printf("28 or 29 Days depending on leap year existence\n");  }  return 0;  } | |
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| **#4** | #include<stdio.h>  int main()  {  int number;  printf("Please enter a number to test if odd or even\n");  scanf("%d", &number);  if (number%2 == 0){  printf("%d is an even number\n", number);}  else {  printf("%d is an odd number\n", number);}  printf("%d is an odd number\n", number);}  return 0;  } | |
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| **#5** | #include<stdio.h>  int main()  {  int a, b, c;  printf("Please enter 3 numbers to arrange them in descending order\n");  scanf("%d", &a);  scanf("%d", &b);  scanf("%d", &c);  if (a==b && b==c){  printf("All numbers are equal\n");}  else if (a>b && a>c){  if (b>c){  printf("%d is the largest number, followed by %d and %d\n", a,b,c);}  else {printf("%d is the largest number, followed by %d and %d\n", a,c,b );}  }  else if (b>a && b>c){  if (a>c){  printf("%d is the largest number, followed by %d and %d\n", b,a,c);}  else {printf("%d is the largest number, followed by %d and %d\n", b,c,a );}  }  else if (c>b && c>a){  if (b>a){  printf("%d is the largest number, followed by %d and %d\n", c,b,a);}  else {printf("%d is the largest number, followed by %d and %d\n", c,a,b );}  }  else {  printf("Please enter valid numbers\n");}    return 0;  } | |
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| **#6** | #include<stdio.h>  int main()  {  int x, c;  printf("Please enter a positive integer to calculate factorial\n");  scanf("%d", &x);  c = x;  if (x==0){  printf("Enter a non-zero number:");}  else  {while (x>1)  { c = c\*(x-1);  x--;}  printf("%d is the factorial\n", c);  }  return 0;  } | |
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| **#7** | #include<stdio.h>  int main ()  {  double dollar;  int cents, quarters, x, dimes, y, nickels, pennies;  printf("Enter an amount (denoting the cents-use decimal point) to calculate the change:\n");  scanf("%lf", &dollar);  cents = (dollar\*100);  while (cents/25 >= 1){  quarters = cents/25;  break;  }  while (cents/25 < 1){  quarters = 0;  break;  }  x = cents - (quarters \* 25);  while (x/10 >= 1){  dimes = x/10;  break;  }  while (x/10 < 1){  dimes = 0;  break;  }  y = x - (dimes \* 10);  while (y/5 >= 1){  nickels = y/5;  break;  }  while (y/5 < 1){  nickels = 0;  break;  }  pennies = y - (nickels\*5);  printf("To create %.2f in change use %d quarters, %d dimes, %d nickels and %d pennies\n", dollar,  quarters, dimes, nickels, pennies);  return 0;  } | |
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| **#8** | #include<stdio.h>  int main()  {  int n, c;  int a=0, b=1;  printf("Please enter a number to compute the Fibonacci sequence:");  scanf("%d", &n);  printf("%d, %d", a, b);  for (int i=0; i<n-2; i++)  {  c = a + b;  printf(", %d", c);  a = b;  b = c;  }  printf("\n");  return 0;  } | |
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| **#9** | #include<stdio.h>  int main()  {  int n, i;  printf("Please enter a number (<= 10) to create a square pattern\n");  scanf("%d", &n);  for (i=1; i<=n; i++)  {  for (int j = 1; j<=n; j++)  {  printf("\*");  }  printf("\n");  }  return 0;  } | |
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