**Python**

1. **C**
2. **B**
3. **C**
4. **A**
5. **D**
6. **C**
7. **A**
8. **C**
9. **A,C**
10. **A,B**
11. number=6

fac=1

for i in range(number):

fac=fac\*(number-i)

print(fac)

1. num = int(input("Enter any number : "))

if num > 1:

for i in range(2, num):

if (num % i) == 0:

print(num, "is NOT a prime number")

break

else:

print(num, "is a PRIME number")

elif num == 0 or 1:

print(num, "is a neither prime NOR composite number")

else:

print(num, "is NOT a prime number it is a COMPOSITE number")

1. strng='naman'

new\_str=''

for i in range(len(strng)):

new\_str+=strng[len(strng)-i-1]

if(strng==new\_str): print(‘palindrome)

else: print(‘Not Palindrome)

1. third\_side= np.sqrt( (side1\*\*2) + (side2\*\*) )
2. strng='naman'

strn=''

for i in range(len(strng)):

char=strng[i]

cnt=0

for k in range(len(strng)):

if(char==strng[k]):

cnt+=1

strn+="% s" %cnt

Machine Learning

1. A
2. A
3. C
4. C
5. D
6. B
7. C
8. A,D
9. B
10. A,C
11. One hot encoded must be avoided in case where the class is ordinal in nature means the classes are associated with some rank where one class is superior to the other and other is superior to the third one and so on. So in other words it should be used in case where all classes are equal in nature.
12. Undersampling and oversampling can be used to deal with overfitting. In undersampling the data with the class causing imbalance is dropped to make it equal to the data with the class which is less in number.

Oversampling: Here data of class which is less in number is increased to match the data with the class high in number. This is done using two techniques known as SMOTE and ADASYN. ADASYN I improved version of SMOTE with minor changes.

1. SMOTE: First it finds n nearest neighbors in the minority each of the samples in the class. Then it draws a line between the neighbors and generated random points on the line.

ADASYN: Its a improved version of Smote. What it does is same as SMOTE just with a minor improvement. After creating those sample it adds a random small values to the points thus making it more realistic. In other words instead of all the sample being linearly correlated to the parent they have a little more variance in them i.e they are bit scattered.

1. GridSearchCV is used to find the best parameters out of given parameters on the best score which is defined in its definition.So it is a method of tuning the parameters of given estimator. Since GridSearch takes into account each and every parameter combination to check for the best result therefore in case of large datasets it will be very time taking task to get best parameters using Grid search instead RandomSearch will reduce the time complexity since it takes random combinations of the parameters.
2. **R2 score** : This metric is a measure of how well our model fits the data.

**Adjusted R2 score**: This is an improvement to R2 score since it do not considers the features which are not correlated to the target.

**Mean squared error**: This is the average of sum of squared differences of actual and predicted values.

**Mean Absolute error**: This is the sum of difference between the actual and predicted values.

**Root mean squared error**: This is the square root of MSE. This can be used in case of very large figures since the MSE can be a huge number there so this can be used to get a better figure of the loss.

**STATISTICS**

1. B
2. B
3. B
4. B
5. A
6. D
7. B
8. A
9. A
10. C
11. A
12. C
13. ANOVA in SPSS is used as the test of means for two or more populations. ANOVA in SPSS must have a dependent variable which should be metric (measured using an interval or ratio scale). ANOVA in SPSS must also have one or more independent variables, which should be categorical in nature. In ANOVA in SPSS, categorical independent variables are called factors. A particular combination of factor levels, or categories, is called a treatment.
14. Assumptions of ANOVA:

Normality – Each sample is drawn from a normally distributed population.

Equal Variances – The variances of the populations that the samples come from are equal.

Independence – The observations in each group are independent of each other and the observations within groups were obtained by a random sample.

|  |  |  |
| --- | --- | --- |
|  | **One-Way ANOVA** | Two-Way ANOVA |
| Definition | A test that allows one to make comparisons between the means of three or more groups of data. | A test that allows one to make comparisons between the means of three or more groups of data, where two independent variables are considered. |
| Number of Independent Variables | One. | Two. |
| What is Being Compared? | The means of three or more groups of an independent variable on a dependent variable. | The effect of multiple groups of two independent variables on a dependent variable and on each other. |
| Number of Groups of Samples | Three or more. | Each variable should have multiple samples. |